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Parliament and Nationalised Transport

THE problem of the relations between Parliament and the nationalised industries, which was the subject of a House of Commons debate last Monday, is mainly one of reconciling the proper accountability of public utilities to the representatives of the nation that owns them on the one hand, with freedom for managements to conduct their businesses without constant looking over their shoulders, on the other. In the case of the railways, since nationalisation in 1948, a *modus operandi* has been evolved between the Minister of Transport and the British Transport Commission whereby answers to questions in Parliament are confined to matters of public interest; questions of detail concerning day-to-day management are referred to the Commission. There still remains an outlet for members of both Houses to express their views on matters of detail,

for on a good many occasions in the year, as reference to our Parliamentary columns shows, debates, whether on specific subjects such as the annual report of the Commission, or on the adjournment, give ample opportunity for speakers to draw attention to any points of detail; and the points raised are taken up by the Commission, even although no question may have been addressed to the Minister. Even so, the danger may always remain of a tendency for a Chairman of the Commission to look back at the Minister instead of carrying out with confidence of freedom from political interference, the policy laid down in the Transport Acts of 1947 and 1953. With a former soldier, instead of a former civil servant, as Chairman of the British Transport Commission, and one who in his career has on the whole been free from the harassing proximity of a Ministry, this danger is less than it was. Under the present organisation of the railways, in which day-to-day matters are being left increasingly to the Chief Regional Managers, the present relations with the Minister and Parliament are reasonably satisfactory. The devolution of authority in railway management that is to take place under the 1953 Act should make matters easier, with even less likelihood of Parliamentary desire to probe into matters of detail. On the other hand, the form which the reorganisation is to take is a matter of wide interest, and there is no doubt that Parliament will wish to make it a subject of a full debate. It is doubtful whether the proposed Select Committee for nationalised industries would improve matters. But it is wholesome, even although some Parliamentary and other criticism of the railways may seem uninformed and unfair, that the publicly-owned railways should be in the public eye and that railway activities should arouse interest rather than indifference.

F.B.I. Representations on the Budget

THE profits tax and the depreciation of fixed assets and valuation of stocks are amongst matters on which the Federation of British Industries has made representations to the Chancellor of the Exchequer, Mr. R. A. Butler, on his forthcoming Budget. As a step towards ultimate removal on grounds of equity of the profits tax, which has been criticised as a discriminatory tax on ordinary shareholders, the F.B.I. maintains that the discrimination against distributed as compared with undistributed profits should be reduced. On depreciation, the Federation reiterates its demand for acceptance of the principle that the difference over the years between actual and historic replacement costs must be taken into account in determining depreciation for tax purposes; given the principle, it is stated, the detailed provisions present no insurmountable obstacles, though financial considerations may prevent recognition of the principle this year. As to stocks, it is stressed that the taxpayer should be free to adopt some method which enables the current cost of stocks consumed to be charged in accounts for tax purposes.

British Equipment for Pakistan Training Centre

SIX British manufacturers are expected to supply signalling equipment for the new Railway Training Centre at Lahore, Pakistan, established under the auspices of the Economic Commission for Asia & the Far East. The equipment will provide for different methods of working terminal stations, for crossing trains at intermediate stations, and for the control of block sections between stations. Equipment for a power-signalling installation at a small terminal includes a miniature lever power frame, colour-light signals, and electric point machines. For crossing at stations, a relay interlocking panel is being provided, with colour-light signals and electric point machines; relays are of the plug-in type mounted on factory-wired racks. Electro-mechanical signalling equipment is also being supplied. A complete range of instruments for block working comprises electric train staff and tablet instruments, tokenless block and lock-and-block instruments. There will also be a set of lifting barriers with flashing signals for level-crossing pro-

tection, a centralised traffic control panel, axle-counting equipment, hand-generator-operated points, and a model coded track circuit. It is understood that the supply of the equipment will be financed by the British Government from funds set aside under the Colombo Plan and that the firms are to be paid by the Government at the rate of half the normal price.

Increasing Railway Efficiency

A START was made earlier this week on the discussions between the British Transport Commission and the three railway trades unions to increase the efficiency of the railways with a view largely to effecting the economies in operation which will help the Commission to bridge the widening gap between revenue and expenditure. This is a step in implementation of the agreement reached on December 16 between the Commission and the unions on railway wages, when it was agreed that all ways of improving working should be considered, and not only adjustments of wages as might result from the inquiry agreed on into the whole railway wage and salary structure. Last Tuesday's meeting was opened by Sir Brian Robertson, Chairman of the British Transport Commission, who played an important part in last December's negotiations, and the Commission's representatives are reported to have included Mr. F. A. Pope and Mr. J. C. L. Train, the Members of the Commission specially concerned with railway matters, and Mr. W. P. Allen, Chief of Establishment and Staff, and also the Chief Regional Managers of the six Regions of British Railways.

Problems of Northern Ireland Transport

PUBLIC transport in Northern Ireland has been left with a traffic that no one else wants to carry, yet, said Mr. G. B. Howden, Chairman of the Ulster Transport Authority and of the Great Northern Railway Board, in a recent address to the Portadown Chamber of Commerce, it was no less efficient today than a few years ago when it earned public approval. If more and more of the public wished to retain complete freedom to do what they liked about their individual transport requirements while the rest of the public had to be provided with reasonable and adequate services, it was difficult, he went on, to see how the transport problem was to be settled on the basis of a self-supporting industry. No doubt under suitable conditions it was usually possible to provide one's own transport at a lower cost than public transport, but people could do so only if public transport were available as an unfailing standby. He asked whether it was likely that if left wholly to private enterprise as suggested and even accepted in some quarters, the freight service which public transport at present gave could be continued on the present scale, or at all.

Express Goods Service in Rhodesia

THE Rhodesia Railways are now operating an accelerated goods service between Bulawayo and Salisbury. It is provided daily and additional services will be made for urgent traffic. No restriction is imposed on the type of goods which may be sent, except that empties are banned. In both towns the railways undertake their own collection and delivery, and special road vehicles work a series of rounds. Special telephones at Bulawayo and Salisbury are available for express service use only. Checker-drivers of the town collection and delivery vehicles distribute the special labels which the goods sent by the service must carry. In this service, which was introduced on January 4, the widest interest is being shown by commerce and industry, and its extension to include Umtali and Gwelo, and from Salisbury to Lusaka and Ndola is being examined. Although, also on the 3-ft. 6-in. gauge, the South African Railways have been operating express goods services for some time, the new Rhodesian facility is a particularly enterprising move in view of the less highly developed nature of the country.

British Guiana Development Plan

PROPOSALS for development in British Guiana during the next two years to cost some £9,000,000 were announced by the Colonial Secretary in the House of Commons on Monday. The largest sum, over £3,000,000, is allotted for transport, communications and public works. Last year a general economic survey mission organised by the International Bank of Reconstruction & Development visited the colony and its report is now published. One member was Professor E. R. Hondelink, well known as a transport consultant and former Director-General of the European Central Inland Transport Organisation, who, in his recommendations on transport, advocates the retention and development of the railway. If this is done he foresees that the system could be made to pay within five years. The British Guiana Government Railway, operated by Transport & Harbours Department, has 60 miles of standard-gauge line running eastwards from Georgetown, the capital, along the coast to the River Berbice, and an 18-mile, 3-ft. 6-in. gauge line from opposite Georgetown eastwards to the mouth of the Essequibo. Both were owned by the Demerara Railway Company until 1922. The Georgetown-Plaisance section, opened in 1848, is the oldest railway in South America.

The Railways During the Cold Spell

ALTHOUGH the recent cold weather in Britain caused delay to some trains, services in general were well maintained and it was not necessary to bring into action the joint consultative machinery for dealing with winter traffic difficulties. As shown on another page, coal, iron and steel carryings kept up well. One of the chief difficulties was to keep points, water troughs and water columns from freezing. In the Southern Region, services were successfully maintained on the longer electrified routes by running the "oil trains," which deposit a film of oil on the conductor rail to prevent ice from forming. The automatic warning system which is under trial in the Eastern Region is reported to have been unaffected by what were the most severe climatic conditions since it was experimentally introduced. On the Continent conditions were much worse. The "Simplon Orient" and "Tauern" expresses were held up by snowdrifts in Yugoslavia, the first time for some years, and many trains had to be cancelled in other countries where lines were blocked.

Mixed-Traffic Locomotives for Spain

AN interesting feature of the order for 25 "Mikado" locomotives received by the North British Locomotive Co. Ltd. for supply to the Red Nacional de los Ferrocarriles Espanoles, is that in addition to the complete locomotives, the firm will supply the bulk of the materials required for the manufacture of 100 of a similar type of engine to be constructed in Spain. The locomotives, which are described and illustrated elsewhere in this issue, are required for mixed-traffic operating on the 5-ft. 6-in. (1,674 mm.) gauge, and are designed to negotiate curves of 175 m. radius. In accordance with modern practice the cylinders are fitted with cast-iron barrel-liners; the hind covers are steel castings; and the front covers are of cast iron and have braking grooves. Skefko roller bearings are fitted to the eccentric rod ends, leading truck, hind truck, and tender bogies, while the coupled wheel axleboxes are of steel castings with gun-metal inserts lined with whitemetal to which lubrication is provided by an 8-feed Silvertown mechanical lubricator. The tractive effort is 18,860 kg. at 85 per cent boiler pressure.

New Manchester-Sheffield Electric Locomotives

ALTHOUGH described as mixed-traffic locomotives, the new Co-Co class for the Manchester-Sheffield electrification is intended primarily for passenger working, and incorporates features in the mounting of the axle-hung motors designed to give good riding and minimise wear of track at speed. Trials with the first of the seven are in pro-

gress, as reported on another page. This is the first Co-Co design with conventional resistance control for main-line passenger traffic in Great Britain, for the only other examples of the same wheel arrangement on British Railways are the Southern Region motor-generator locomotives, which by taking over Newhaven boat train workings in 1948 provided the first instance of electric haulage of expresses in this country. Although it is 33 years since the appearance of Sir Vincent Raven's experimental high-speed 2-Co-2 for the North Eastern Railway, it is only since the recent war that there has been a pronounced trend away from the express electric locomotive with fixed driving wheelbase and guiding bogies. Modern power bogie designs are not only required to attain express speeds, but to handle a range of duties so wide that the distinction between a mixed traffic and an express locomotive becomes increasingly indefinite.

Makers of History

THERE was an air of timelessness about the old-fashioned type of railway carriage view. It was comfortably accepted by all who beheld it that it was photographed a long time ago, much before they could have featured in it themselves, and the publisher was too discreet to put a date in the caption. Similar reticence is not observed in titling the coloured prints of railway travel at different periods which are an appreciated adornment of some London Midland Region suburban coaches. The traveller running his eye round the compartment smiles indulgently at the mechanical and sartorial fashions of the 19th century, until he suddenly realises that the print he is now looking at depicts a period he has known himself. It has been observed that the first realisation of the passing years comes when one notices the comparative youthfulness of many policemen. The second may well be experienced when looking at "Travel in the 1920s" in a local train from Euston to Tring. Perhaps the view occurs close to one of a mail train of the London & Birmingham Railway, or locomotives with unroofed cabs and bearded crews at Richmond Station. With such supporting pictures, it is hard for the beholder not to feel that he himself has become part of an historical frieze.

British Locomotive Manufacture

UNLIKE the conditions obtaining in most other countries, in Great Britain there are not very close ties between the State-owned railways and the private companies which manufacture locomotives, carriages and wagons and so forth. The two industries have grown up side by side and while both have played a very important part in the national economy, they have done so along independent lines. From time to time the railways have placed orders for locomotives with the private builders, but usually this has been the result of exceptional circumstances and certainly not as a matter of any settled policy. More than once suggestions have been made for closer working between the locomotive manufacturers and what are now British Railways, but so far nothing has been done to put this idea into effect. In competition with overseas builders for export orders, the British locomotive manufacturers on many occasions have been at a disadvantage because of the practice abroad of the railway system obtaining its locomotive stock from the local private builders. This, by providing some element of stability in the work passing through the foreign builder's shops not only has enabled overhead costs to be spread, but a skilled labour force to be kept together during the times when export orders have been few or lacking.

At the present time, when a good many changes are under consideration in the organisation and practices of British Railways as a result of the passing of the recent Transport Act, the time may be opportune to consider once more whether there is not something to be said for the adoption of a policy under which British Railways should place at any rate the bulk of their locomotive orders with outside contractors. The position at the moment is

the reverse. Last year, for example, British Railways took into service about 150 new steam locomotives of which all but 11 were built in their own workshops. The 1954 locomotive building programme calls for 325 locomotives of all types, of which 254 will be of the new standard designs. It is probable, therefore, that the outside builders can hope to receive a rather larger share, but on the basis of the present policy it is unlikely that the tonnage involved will be very great. The primary function of British Railways locomotive shops is repair and maintenance. Mr. R. C. Bond, in his paper "Organisation and Control of Locomotive Repairs" read before the Institution of Locomotive Engineers on March 18 last year, showed that at one large British Railways installation the ratio between new construction and repair and maintenance was 9.75 to 90.25.

If a large part, if not the whole, of British Railways locomotive requirements were transferred to private undertakings on a long-term basis there is no doubt that the competitive position of the locomotive manufacturers for export business would be considerably improved by reason of the introduction of a stable element which at present is lacking. As competition increases for overseas orders there can be no doubt that the British Railways once more will begin to feel acutely the repercussions of the fact that Great Britain is one of the very important countries in which the railways build their own locomotives, in contrast to the long-established practice on the Continent and America.

The question frequently raised when this suggestion has been made, the relative prices of locomotives built in railway-owned and privately-owned shops, is one which is by no means incapable of solution with goodwill on both sides. The matter is one which should be looked at not only from the point of view of sectional interest, whether it be that of railway or private builder, but from that of the national economy as a whole.

More Diesel Passenger Trains

THE plans of the British Transport Commission for extending the use of multiple-unit lightweight diesel passenger trains, of which details are given on another page, show boldness and willingness to experiment with what is largely a new application of diesel traction to various forms of passenger traffic. The Great Western Railway before the war had done much to develop the use of diesel railcars for both fast and stopping passenger services. The operation of complete interurban and other services by multiple-unit trains now planned goes farther.

In November, 1952, the Commission announced the immediate first expenditure of £500,000 on two-car units with engines by Leyland Motors Limited and transmissions by Walker Bros. (Wigan) Ltd. The first of these were to work interurban services in the West Riding of Yorkshire, this area having been chosen as the first field of operation because of its railway and economic geography, with centres such as Leeds and Bradford as good natural bases for a fleet of diesel units; the trains for this area are expected to be complete about the end of April next. The decision to undertake this development, taken after study of diesel operation abroad, was largely the result of consideration by the then Railway Executive of the findings of the special committee on diesel traction. It was further announced, in September last, that lightweight diesel trains of similar design to the West Riding units were to replace local steam trains on some lines in West Cumberland, and that orders for power equipment had been placed with A.C.V. Sales Limited, with the motorcoach frames and bodies and trailer coaches built by British Railways at their Derby Works; these are due for completion next autumn. Shortly afterwards, during the House of Commons debate on the British Transport Commission report for 1952, the Minister of Transport & Civil Aviation, Mr. Alan Lennox-Boyd, referred briefly to the existence of plans for multiple-unit diesel trains in East Anglia and Lincolnshire, and between Edinburgh and Glasgow.

The extension of the plans now announced embraces not only the areas named above, but also the Newcastle-

Middlesbrough services. The projects show much faith in the ability of the new services to develop traffic and effect economies. The active steps taken to add to the areas served in this way and spend £2,000,000 on this type of development—especially with the present limitations on capital expenditure—and the amplification of the project before the first application has been tried, show a far from timid approach or cautious reluctance to embark on experiments. The success of the G.W.R. railcar services no doubt contributed.

There is on the other hand little similarity between the various lines and services selected. If West Riding and the Newcastle-Middlesbrough (with important intermediate points) services are to be interurban, in the sense of linking large population centres, this will be less so in the case of West Cumberland, and even less in Lincolnshire and East Anglia, where the new trains seem likely to radiate from centres such as Cambridge. The totally different character of the Edinburgh-Glasgow services is recognised in the decision to provide amenities such as buffet cars, and to regard them as a prototype of fast and relatively light main-line interurban services. How far the diesel sets will replace steam trains, or supplement them, is a matter for the Chief Regional Managers, who will state their plans shortly. The intention of the new facilities is to create traffic besides effecting economies. Whilst the latter is practically certain, the former object may be hard to achieve where passenger traffic for various reasons, such as the inconvenient location of stations, has already gone to the roads. Each area will present problems of its own.

The foregoing projects; the £11,000,000 expenditure on diesel shunting engines over the next four years announced last autumn by Mr. Lennox-Boyd; the main-line diesel and gas-turbine locomotives, the diesel passenger railcars, and the many diesel shunting locomotives procured or ordered before nationalisation by the main-line railway companies and latterly by the Railway Executive and the Commission; and the many studies made and plans formulated for diesel services both before and after 1948 show that the British railways have been active in diesel developments, despite the peculiar difficulties of developing this form of traction in Britain.

U.S.A. Railway Operations in 1953

AN article in our February 5 issue discussed the recession in the U.S.A. railway traffics and revenues which happened after August, 1953. Since the article was written, we have studied the review of last year's railway operations, contributed by Mr. J. Elmer Monroe, Vice-President & Director, Bureau of Railway Economics, Association of American Railroads, to the January 11 number of our contemporary, *Railway Age*. The full information now available confirms the accuracy of our comments on recent developments across the Atlantic. In preparing his review, Mr. Monroe used actual data for the first nine or ten months of 1953, and framed certain estimates for the whole year which will be revised, when necessary, in April, 1954. Comparing 1953 with 1952 on this temporary basis, he came to the following findings: (a) freight ton-miles were down about 1 per cent and passenger-miles 7 per cent; (b) operating revenues reached an all-time high level of \$9,017 million, about 1.5 per cent above 1952; (c) operating expenses were at the record height of \$6,781 million, 0.5 per cent over 1952; (d) the net railway operating income of \$1,125 million was \$47 million larger, making the rate of return on property investment 4.23 per cent against 4.16; and (e) net income, after charges, was \$900 million, an increase of \$75 million.

The future financial outlook is uncertain because the Korean truce started a downturn in business trends which may continue in 1954, but Mr. Monroe predicts that the railways will be more efficiently and economically operated than ever before. Operating statistics improved so much during the 10 months to October last that in all probability new records were set up for the whole of 1953. Net ton-miles per freight train-hour rose to 23,574, an advance of

1,007 on the 1952 average. The daily mileage of freight locomotives was 133 against 127, while passenger locomotives ran 287 miles a day, compared with 266. In 1948 the freight locomotive average was 117 miles and the passenger figure was 221. Mr. Monroe attributes the great strides made in both these averages in six years to the virtues of the diesel-electric, which in the first 10 months of 1953 hauled 74 per cent of gross ton-miles of wagons and contents, moved 79 per cent of passenger train car miles and accounted for 83 per cent of shunting engine hours. The average freight train load of 1,135 tons travelled at 18.1 m.p.h., while the average passenger train sped along at 39 m.p.h. with 96 people on board.

In large measure the betterment in operating was the fruit of liberal capital expenditures since the war. In 1953 these spendings totalled \$1,251 million, of which about 68 per cent was allocated to equipment and 32 per cent to permanent way and structures. Purchases of fuel, material and supplies cost \$1,800 million, nearly the same amount as in 1952. The railway paybill stood at \$5,350 million, rather above the 1952 and 1951 totals. The wages were paid to an average of 1,210,000 employees, 17,000 fewer than in 1952 and 66,000 fewer than in 1951. Annual earnings per individual averaged \$4,420, an increase of 1.6 per cent on 1952, but fresh demands for improved conditions of service were put forward by various sections of staff and will be the subject of negotiation this year. Intense competition from carriers by road, air, water and pipeline reduced the railways' share of the nation's freight and passenger traffic so that they are not in a strong position to meet further increases in the cost of either labour or materials, and the early months of 1954 may be a testing time for a number of the weaker companies.

Kowloon-Canton Railway

THE report for the year ended March 31, 1953, of the Kowloon-Canton Railway (British Section), which has been received from Mr. I. B. Trevor, General Manager, is largely concerned with the various controls imposed on the trans-frontier movement of passengers and trade. In our issue of October 9, 1953, it was stated that through passenger traffic was suspended by regulation on October 15, 1949.

The effect of the controls on through freight traffic are reflected in the import and export tonnages of 220,822 and 43,780 tons respectively. Despite considerable uncertainty as to financial prospects during the earlier part of the year, and some anxiety caused by various setbacks in operation and maintenance, there was a final surplus of revenue over expenditure of \$1,360,000, secured largely by economies in staff and equipment.

A frequent source of trouble was the condition of the boilers of the 2-8-0 "austerity" locomotives. A further cause of anxiety was the failure of the Thai Government to supply sleepers, necessitating the purchase of semi-hardwood sleepers from Malaya. Reductions in shipping freights made it possible to obtain coal from India, South Africa, and China at more moderate prices. The high cost of steam locomotive maintenance on this railway is expected to expedite conversion to diesel traction.

Freight revenue in 1952-53 totalled \$5,254,583, some 5 per cent more than in the previous year, because of increased freights from China. In fact, they provided \$1,340,910 in freight receipts, an increase of more than 100 per cent over the corresponding figure for 1951-52. Conversely, export tonnages fell by 63½ per cent due to the embargo. Local passenger traffic was heavier than in the preceding year to the extent of 11½ per cent in journeys and just under 3 per cent in receipts. Other passenger traffic, however, was forced down by the immigration regulations. Two train collisions included one when a gun carriage towing a gun collided with a local train at a military occupation crossing, seven passengers being injured.

The engine failure and abnormal repairs to the 12 2-8-0 "austerity" locomotives resulted from various defects, including rusting and breaking of the steel fire-box stays and difficulties with multi-ring valve pistons.

Measurement of Train Resistance

AN increasing amount of information is becoming available on the performance and efficiency of locomotives and it is of importance for the resistance of modern types of passenger and goods vehicles to be correspondingly determined. This aspect of railway operating was discussed by Dr. H. J. Andrews, General Assistant, Electrical Engineering New Works & Development Section, British Railways, in a paper delivered before the Institution of Locomotive Engineers last Wednesday, in which he stated that, possibly, the first accurate investigation of the resistances of modern types of coaches was made on the Lancashire & Yorkshire Railway in 1901.

A number of investigations were made from which an average relationship for the resistances of coaches at different speeds could be obtained, but the individual measurements had considerable spread, and it was not found possible to co-relate the effects of the actual wind with train resistances. What was probably the most extensive investigation into the speed was that at the University of Illinois. The tests were carried out between 1908 and 1934 on the main-line of the Illinois Central Railroad. Average values of distance were determined for passenger and goods vehicles of different weights, and a separate series of tests was undertaken to measure resistances of trains on curves. The results were generally representative of American practice and not applicable in this country.

Tests were also conducted on the German State Railways, on the Grunewald-Magdeburg line in 1931, and also on the Berlin-Hamburg line 1937, with streamline double-deck coaches, also by the Indian State Railways in 1935. For various reasons it was not found possible to make any systematic determination on the separate effects of the wind on the train. A series of tests were also carried out by the L.M.S.R. in 1947 on the Rugby-Peterborough line, followed in 1951 by a further series of tests with two sets of eight L.M.R. coaches.

On British Railways, the use of the mobile testing units, with the Fen lines of the Eastern Region, and the statistical method of analysis adopted, has enabled the running resistance, including wind resistance of carriage and wagon stock, to be determined with a convenience and accuracy not hitherto possible. Separate determination of wind resistance was of particular importance, stated Dr. Andrews, in that it enabled the maximum resistance likely to be encountered in high winds to be estimated, and it was interesting to observe, in comparison with earlier results over the last 100 years, that there appears to have been a progressive decline in passenger train resistance. It was also of interest that all the values of air resistance measured, were considerably lower than those generally forecast from wind tunnel experiments, because of the difficulty of interpreting the scale effect of wind tunnel experiments, and possibly, to some extent, to the difficulty of reproducing the effect of the ground in a wind tunnel.

The Background and Problems of London Transport

THE London Transport Executive has the task of providing public passenger transport for the 10 million persons who live within a radius of 25 miles from the centre of London. The diverse interests of London make different demands which express themselves in 13,000,000 passenger journeys every weekday on the London Transport system, and another 1,000,000 on the local services of the main line railways.

In the view of Mr. L. C. Hawkins, Member, London Transport Executive, expressed in his paper "Passenger Transport in London," to the Western Region, London Lecture & Debating Society, on February 11, without the co-ordination of services made possible by single ownership, London would not enjoy its present standard of transport services. The principle of co-ordinated public passenger services has grown not out of a political theory but out of the very nature of a transport service. In London the question of a common financial interest is not just one

of co-ordination between services given by one type of vehicle. It is one of co-ordination and community of interest between distinct forms of transport. Fast and high-capacity electric railways are essential as the base for all local traffic services in London; in particular, they must cater for passengers making longer journeys and cope with heavy peak-hour traffic. The goal is not that each form of transport but that the combined services shall be self-supporting. To make co-ordination complete the community of financial interest inherent in single ownership is essential.

Mr. Hawkins then showed how the need for traffic co-ordination in London had been recognised as early as the building of its first local railways, but that not until the Underground Electric Railways Company had gained control by 1913 of many of the railway, bus and tramway companies was any great step forward made. In 1915, a pooling scheme, the Common Fund, was established between the five principal operating companies. They remained separate entities, with separate capital obligations, but their combined revenues became available for meeting their combined expenses. Competition between them was eliminated. This fusing of financial interests paved the way for the introduction of a common management. Lord Ashfield and his colleague, Frank Pick, extended ever wider the bounds of public transport, improving the service and cheapening the cost, but co-ordination became complete only in 1933 when the London Passenger Transport Board was established.

The task of consolidating the undertakings acquired, and weaving the services into a comprehensive pattern was virtually completed before 1939. When nationalisation came London Transport remained a separate organisational structure, the London Transport Executive, under the British Transport Commission, responsible for the provision of passenger transport in substantially the same area.

Its peak-hour problem is in two parts. First, there is the physical difficulty of moving, in a short time, great numbers in the morning and evening. The burden falls with particular severity on the railways, where the difference between peak and off-peak traffic is greatest. The modern tube trains of seven cars have seats for 300, but fully loaded, with standing passengers as well, they can carry over 800 at a time. In spite of this overload capacity some two-thirds of the rolling stock is still not required, and stands idle, outside rush hours.

Not one new tube has been driven through the centre of London since 1907. Between then and 1953 the route mileage worked by tube trains grew from 35 to 152 miles, but extensions have been at the outer ends and have all brought more and more traffic to the centre. To cope with this the carrying capacity of the original tubes has had to be expanded. Train speeds have increased from an average of 15 to 21 m.p.h. The passenger capacity of trains has been enlarged by placing electrical equipment under the floor, and the length of the trains has been increased. Tracks have been resigalled to enable 40 trains an hour to operate in one direction over one track. Speed-control signalling enables the trains to follow one another more closely into busy stations. The original stations have been reconstructed.

Additional tube railways are badly needed and their routes have been settled, but at present resources do not permit their construction. That with the highest priority, Route C, will run from Walthamstow, via Seven Sisters, Kings Cross, Euston, Oxford Circus, Green Park, and Victoria to Fulham Broadway, where it will join the Wimbledon line. It will give tube facilities to a part of North-East London not now so served, relieve the heavily-pressed Piccadilly line, and give direct rail connection between Oxford Circus, Green Park and Victoria. But with high present-day costs of construction and equipment it could not be self-supporting. Moreover, with the high taxation of fuel oil the bus services no longer earn surplus profits which can be diverted, as between the wars, to the support of extended tube railways.

During the war passenger traffic in London had to be kept moving, but with rising costs and diminished traffics it was scarcely a commercial proposition, particularly

when, for policy reasons, fares increases were severely restricted. By 1946, traffic was recovering, but with the wide disparity in fares and expenses the undertaking was still insolvent on revenue account. After a public inquiry, fares were raised in 1947 to an average of about 30 per cent above prewar, an increase less than half the rise in working costs. Nevertheless the undertaking began to pay its way as traffics in 1947 and 1948 were buoyant. After 1948 the supply of new vehicles improved and it became possible to introduce new and extended services and strengthen existing services to a level more adequate for the traffic.

In 1950 petrol rationing was withdrawn. Later there were many more new cars for the home market. These led to a great increase in private motoring and a diminished traffic on the public service vehicles, particularly optional traffic. The supply of consumer goods improved; passengers no longer had to travel so far or so often in the search for what they wanted to buy and there was increased competition for the available spending power. The effect has been a fall in the average annual number of rides per head of the population on both the London

Transport and British Railways London area services from 525 in 1948 to under 480 in 1953.

At the same time costs were persistently rising. Increases in wages rates have added £9,250,000 to the bill. The increased duty on fuel oil has added another £3,250,000. Higher fares were inevitable. When they came their impact was more severe than it would otherwise have been, because the postwar level of fares was so out of step with the then level of costs. Today London Transport fares are on average 77 per cent above prewar, but costs, even without the recent wages increases, are higher by 130 per cent.

The search for reduced costs through improved efficiency has continued. Maintenance methods are being recast in conformity with modern production techniques, and new equipment to give greater operating efficiency and lower maintenance costs is being introduced. Such factors cannot, however, do more than contribute to meeting the impact of higher price levels and wages rates. The rest can come only from increased traffic without commensurate increase in services, that is, from a still higher average passenger load, or from higher fares.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

British Railways Heavy Freight Locomotives

February 4

SIR,—The new British Railways 2-10-0s are certainly impressive machines. It would be quite a morale builder if at least the first of the class could be lined out, if not painted in passenger livery, and named, say, *Hercules*.

I am still not clear for what traffic these engines are intended, as block sections, sidings, and so on are generally too limited for any increase in the length of freight trains; and while mineral traffic is handled in non-fitted wagons it is doubtful whether such trains can be speeded up.

British Railways could more profitably build a new 2-8-2 mixed design to handle heavy, fast, fitted freight traffic. Such a locomotive should be capable of handling trains of at least 600 tons at 60 m.p.h.

Yours faithfully,

J. B. LATHAM

18, Wheatsheaf Close, Woking

maximum h.p. per ton is as high as 60; a 50-ton motor coach could have four motors of 750 peak h.p., e.g., of 650 h.p. one-hour or 500 h.p. continuous rating. I was proposing a mere 500 h.p. one-hour rating at some 50 m.p.h., two motors per coach of 40 tons weight, with about 12 tons on each drivers axle, which is good for 720 h.p. As for Mr. Williams' last paragraph, the larger Swiss railways have never been too proud to learn from the smaller, or from abroad.

I have never claimed that all bad riding is due to axle-hung motors; bogie design as a whole is even more important. Perhaps the Southern Region, whose Bulleid-designed steam stock is so comfortable, will try something on the lines of S.L.M. or Schindler motor bogies in continuance of their experiments, or at least fit coil springs on the axleboxes and shock absorbers where necessary.

JOHN RODGERS

132, Worrin Road, Shenfield, Essex

Three-Aspect Signalling

January 29

SIR,—I refer to Mr. C. F. Wells' letter in your January 22 issue. Slotting is inevitable and is the basis of the whole matter. It should be quite simple and straightforward. "Direction" levers, token and other block instruments should not be affected.

The placing of instruments in the booking office was condemned years ago at the inquiry into the Abermule accident. The practice was largely blamed for the accident and it was recommended that they be put in the signalbox. This would not affect the use of repeating instruments and bells.

Yours faithfully,

COURTENAY BARRY

The Old Manor, Salisbury

Station Name Signs

February 9

SIR,—Mr. Thomas E. Haywood, in his letter published in *The Railway Gazette* of January 29, writes: "It would be good news to hear that the object is to standardise one type of sign for the whole of British Railways."

Standard signs for the whole of British Railways were in fact introduced in 1949, and were briefly described in *The Railway Gazette* of May 20 of that year (page 562). The illustration in your issue of January 1 (page 26) shows this standard sign imposed on a background designed by the Southern Region for use on its own stations. The standard signs consist of enamelled metal plates of standard sizes with Gill Sans lettering on a background of the Regional colour. Large signs bearing the station name in 12-in. letters are being fixed at the incoming ends of platforms at all stations on main lines and some subsidiary lines, and smaller signs are displayed at intervals along the platforms; these smaller signs are 3 ft. long and have letters usually 3 in. high.

Although the re-signing of stations has been hampered by labour and material difficulties, and by the priority of more urgent work, nearly 900 passenger stations were wholly or partially re-signed in the years 1948-53 inclusive.

Yours faithfully,

J. H. BREBNER
Chief Public Relations &
Publicity Officer

British Transport Commission,
222, Marylebone Road, London, N.W.1

Experiment in Traction Practice

January 22

SIR,—With reference to Mr. W. J. Williams' letter in your January 22 issue, the Southern Region is to be congratulated on its experiment, and I hope that the results, even if disappointing, will be published soon.

I agree with his remarks on traction motor characteristics; but whilst the starting and one-hour ratings of most Swiss motors are not far different, the continuous rating, used on steep grades, is as much as 80 per cent of the one-hour rating with recent designs. The Continental figure for

THE SCRAP HEAP

Stirling Singles—100 Miles a Day

Describing G.N.R. 8-ft. single No. 22, designed by Patrick Stirling and built at Doncaster in 1874, four years after the first of the class, Nos. 1 and 8, an engineer writes in 1877 that this was the Royal engine, having worked the Royal train on 18 occasions, that she could deal with loads of 15 coaches (about 250-270 tons), and that she ran "from 100 to 200 miles per day."

Cavalier Treatment

There will be indignation among Cromwellians at a deed by London Transport.

Electric locomotives on the Metropolitan Line are gradually getting their name plates back. [See *The Railway Gazette* of January 8.] Before the war one locomotive was called *Oliver Cromwell*. This is the only name that is being changed. It will be called *Thomas Lord*, after the founder of Lord's cricket ground.

Say London Transport: "We dropped Cromwell because he had less association with the Metropolitan Railway area than any of the others."—From the *"Evening Standard."*

Triangular Sleepers

The question of the best form of railway sleeper exercised the minds of civil engineers for many years before the rectangular form was adopted. The accompanying woodcut has been sent us by a correspondent, who states that it is taken from the *Civil Engineers' Journal* of 1842 and depicts the triangular form used by the South Eastern Railway at that period.

This sleeper was cut from a Baltic fir square baulk divided diagonally to form four sleepers. It was claimed that by this economy of timber four sleepers could be obtained from the same baulk as only cut out two in the rectangular

form, that they had an equal bearing on the ballast in a wedge form, and that the surface exposed to weathering was reduced. It was found, however, that the wedge shape inclined the sleepers to sink in the ballast and heave it up between them, and that the wood was more prone to cleave than in the rectangular form.

Staff Welfare on the Old G.W.R.

When in 1843 the old G.W.R. Company chose the site for their railway works in the valley one-and-a-half miles from the country town of Swindon, they were faced with the problem of housing their workers. A model village built of local and Bath stone emerged, complete with church, school, and playing field, a Mechanics Institute which contained hall, stage, and dressing rooms, a library, reading room, and a games room. A hospital was built.

A few years later washing and Turkish baths were constructed which functioned until the early 'nineties when a comprehensive scheme was undertaken which resulted in a group of buildings being constructed by the company on mortgage to the workers, who eventually became the owners by virtue of a few coppers a week membership fee. This building contained two swimming baths, washing and Turkish baths, a laundry, and, finally, a health centre. The health centre was staffed with eight doctors, and ancillary assistants. The members could then obtain all the benefits now provided by the present National Health Service. This centre was without comparison in the whole country and when it was taken over by the National Health Service in 1948 it became their prototype. My membership fee was 8½d. per week, for which I and my family—seven persons—received medical, surgical, and hospital service. . . .

In his last talk ["Prospect of Britain"] Mr. Salmon said that we had robbed

the industrial workers of the brains they needed. If the old G.W.R. robbed its workers of their brains, the railway company certainly ploughed a considerable portion back into the industry with their system of appointing to executive positions members of their own personnel. From the primary schools of Swindon, and its railway workshops, railway executives can be traced throughout Britain.—From a letter by Mr. A. G. Harris to "The Listener."

The Malignant Ticket

For all its mean in insignificant aspect the railway ticket is full of sinister power. It contains all the elements of a conflagration which a chance spark may at any time set into a blaze. The essentially temperate correspondent who complained mildly that he cannot go to Station A and buy there a return ticket from B to A has aroused others not so mild. The railway ticket can inspire an otherwise reasonable being to embark on an insensate law suit. He suddenly exclaims, "Hooroar for the principle," and declines to surrender his ticket on the ground that he has paid for it and it is his property. . . .

"No ticket!" cried Sherlock Holmes cheerfully in the little matter of a corpse on the line. "Dear me, Watson, this is really very singular. According to my experience it is not possible to reach the platform of a Metropolitan train without exhibiting one's ticket." He was doubtless right.—From "The Times."

Loco Lines

The Dowagers

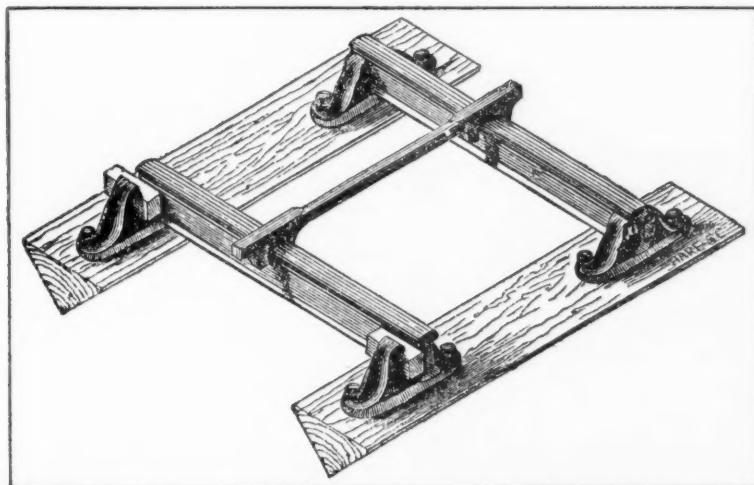
One day, from other pleasures barred,
I wandered through a shunting yard
And met a late Edwardian queen,
Once "plated" in the *Magazine*.
"Ah, yes," she sighed, "I well recall
"The praise bestowed by one and all
"That time—it seems so far away—
"I went to Plymouth in a day."

Another piped up with her tale:
"Indeed I hauled the 'Irish Mail'."
And yet one more took up the strain:
"Why, I once pulled a Royal train,
"But, there, I mustn't boast, you know,
"Twas all so very long ago."

"Now we're condemned to biff and buff,
"No wonder we get out of puff.
"Forgive me, if, just now, I choked;
"I cough a little when provoked;
"The least thing tends to rattle me,
"I've had six new insides, you see."

The latest 4-6-2 sneered by,
With insolent efficiency;
Useless to fret or fume or fuss,
Sic transit waits for all of us.
To every age its own romance;
I bade farewell to elegance
And wondered what ironic soul
Had set a diesel drawing coal.

A. B.



Triangular section timber sleepers as used on the S.E.R. in 1842; four such sleepers were cut from a square baulk

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

NEW ZEALAND

Tangiwai Accident Inquiry

A board of inquiry appointed by the Minister of Railways will begin a public investigation into the Tangiwai disaster as soon as it is possible for it to assemble in Wellington. The Minister has requested the board to report its findings not later than February 27.

The order of reference requires the board to submit a finding as to the cause of the accident and whether there was failure by any person in the service of the Government to exercise reasonable care, or to fulfil any duty that could reasonably be expected of him in the circumstances leading to the accident. In addition, it is required to report on all other matters arising out of the accident which it considers should be investigated, or which should be brought to the attention of the Minister. Finally, the board is asked to recommend what steps, if any, should be taken to prevent a similar accident. The inquiry is to be conducted under Section 68 of the Government Railways Act, 1949, which permits the hearing of evidence in public.

INDIA

Punctuality of Suburban Trains

The punctuality of the Bombay suburban service of the Central Railway recently suffered a setback. It was noticed that suburban trains were being systematically stopped between stations by the application of the vacuum brake

from the intermediate driving compartments by factory workers and others. During October last unauthorised stoppages reached an unprecedented number, causing extensive damage to many electric units and affecting punctuality. Measures have been taken by the Administration to ensure that the public is not inconvenienced. Police now travel in the intermediate driving compartments of up and down Kalyan trains between certain hours and special checks have been organised at places where trains are generally stopped, and arrests made.

New Stations

Two new stations are to be opened by the Central Railway in the Ulhasnagar area near Bombay. One, to be called Shahad, is between Kalyan and Titwala on the Delhi main line; the other will be on the Poona line between Vithalwadi and Ambarnath.

CANADA

New C.N.R. Coaches

The first of 218 new all-steel coaches ordered by the C.N.R. are now in service between Montreal and Ottawa. The cars are painted in the distinctive new exterior colour scheme of the railway—green and black, with gold trim and lettering and the C.N.R. red maple leaf monogram at each end. The seats for 80 passengers are all of the rotating type with foam rubber padding and reclining backs. The coaches are electro-mechanically air-conditioned with the heating

automatically controlled by thermostat. For the first time four-wheel bogies with coil spring suspension are being used on C.N.R. stock.

The order for the coaches was placed by the railway with the Canadian Car & Foundry Company at a cost of \$29,000,000. They form part of the largest single order for new passenger stock in Canadian railway history. In all, the C.N.R. is awaiting delivery of 359 new coaches, including sleepers, parlour and dining cars.

BRAZIL

Foreign Trade Rules Revised

A new law, sanctioned by President Vargas in January, declares extinct the Export-Import Department, which has been severely criticised in press and parliament, replaces it by the Department of Foreign Trade (Cacex), and legalises exchange auctions.

Representatives of all government organs, dealing with foreign trade, and of the confederations of industry, commerce and rural associations will form part of the Council of Cacex, who will appoint delegates in all State capitals, to speed up transactions throughout Brazil.

Cacex will issue export licences and licences to import to those who acquire promissory notes of exchange at auction. Prompt payment for imports is thus guaranteed. Import licences are made non-transferable, thereby suppressing the practice of acquiring permits for re-sale at abusive prices.

Export and import operations, as well as the payment of corresponding freights, insurance and banking charges, will be effected at official exchange rates. Cacex may, however, fix exchange surcharges, according to the nature and degree of essentiality of the imports. The latter will be divided in categories, for the purpose of establishing the percentage of exchange available for each. Existing classifications will be maintained until new lists are published.

Only the following are entitled to import: legally registered commercial importers; industrial firms for their own use; rural and co-operative societies for their own use and for the commercial activities of their members; government departments, agencies and autonomous institutions and mixed-economy societies within the limits of their approved exchange allotments; physical persons for their own non-commercial use.

HUNGARY

Synthetic Locomotive Fuel

Manufacture of synthetic locomotive fuel by spraying hot fuel-oil residue from petroleum refineries on to a mixture of inferior coal and peat has begun.

On a British-Owned Central American Line



Photo]

[K. Cantlie

Baldwin 2-6-0 locomotive, built in 1903, on Limón-San José train ascending 1 in 23½ gradient on the Costa Rica Railway

It is claimed that the resulting mixture is as good as high-quality boiler coal and is easily shovelled.

The process was devised 25 years ago by a young technician named György Sipos, but was not then taken up commercially. Now, however, the Ministry of Transport is spending £45,000 on developing it. Production of the mixture began recently at the Hámán Kató locomotive fuelling depot, at a rate, initially, of 150 tons a day.

Hammocks for Children on Trains

Hammocks for young children are to be installed in coaches as an experiment, 12 hammocks have been fitted in the night train between Budapest and Pécs and more will be introduced on other lines during the year.

NETHERLANDS

New Bridge at Nijmegen

The Nijmegen to s' Hertogenbosch road crosses the railway near Nijmegen Station on a skew viaduct which, inadequate for heavy traffic for some time and badly damaged during the war, has been replaced by a prestressed concrete structure of unorthodox design.

The bridge has three spans about 85 ft. long. The two outer spans consist of 14 parallel girders of prestressed concrete, prefabricated on a nearby site, and left to set until all influences such as creepage were no longer able to cause parasitic moments in the structure. The girders were then moved across the spans by a specially designed vehicle with two aircraft-type pneumatic wheels moving on steel girders which served as a temporary bridge. They were then lowered into position, each girder resting on individual abutment supports

normal to its axis, and were cross-braced by concrete transoms cast in situ and prestressed in the direction normal to the centre line of the bridge.

The girders overhang some distance into the central span and are integrated with the 13 girders of that span which are cast in situ in such a position that their centre lines halve the intervals between the 4 ft. 5 in. intervals of the outer span girders. The whole bridge thus forms a continuous structure which is statically indeterminate to a high degree, but the calculation has been greatly simplified by the elimination beforehand of parasitic moments.

The bridge was constructed within seven months. The contractors were N.V. Het Spoorwegbouwbedrijf and N.V. Ibis; both these firms now have applied for patents for the construction method.

BELGIUM

New Electric Locomotives

Deliveries are due to take place early this year of the first batch of 50 of the 133 Bo-Bo locomotives ordered for the next phases of the electrification programme. These machines are being built by the Ateliers Metallurgiques de Nivelles and A.C.E.C.-S.E.M. Their design is based on experience gained with the 23 locomotives of class "101" and the three later prototypes which were commissioned to study electric traction performance at higher speeds. Like these prototypes, the new series has a maximum service speed of 77.7 m.p.h. as compared with the 62 m.p.h. of the "101" class, and is equipped with automatic accelerating equipment adjustable for different tractive efforts. Ten economic running speeds are provided.

The continuous rating is 2,360 h.p., and the locomotives weigh approximately 80½ tons.

Allée Verte Station Closed

Allée Verte Station, Brussels, the oldest station on the Continent, closed on January 17. On May 5, 1835, the first train from Brussels to Malines departed from Allée Verte, thus inaugurating the first railway in Europe. The station was only a simple enclosure, with a small hut for the issue of tickets, and had three tracks. Six years later, with the opening of the Gare du Nord, the station was assigned to goods traffic. After 1907 it was used only for a few hours daily for workmen's trains.

The original rails of 1835 are said to be still in position, buried underneath the increase of height, when the tracks were relaid after the 1914-18 war. The loss of the station as a historic souvenir is a consequence of the Brussels Junction Line. On the present site of Allée Verte a modern residential quarter will be erected. The new helicopter airport of Sabena is also situated there.

FRANCE

Improved Signalling at Marseilles

Thé S.N.C.F. has brought into use at the entrance to Marseilles Saint-Charles a new all-relay power-operated signalbox, in place of the previously mechanically-operated box. The new box controls 21 route variations and uses the automatic-cancellation principle.

In itself it is a comparatively small installation, but it is intended only as the first step in a much more ambitious scheme to control all points and signals in the Marseilles area, as far as and including those at Marseilles Blancarde Station, from one central box.

Publications Received

Cours d'Exploitation des Chemins de Fer. (Studies in Railway Working.) By U. Lamalle. Paris 6e: Dunod, 92, Rue Bonaparte. 10½ in. x 8½ in. 312 pp. Paper covers. Price fr. 2,600.—This is a second edition of the fourth volume in a series dealing also with commercial, signalling, and permanent way subjects. The present book covers motive power and braking, and has been revised to give due weight to the importance of electric and diesel traction at the present time. For the same reason a general review of the resistances to motion of trains and locomotives of all types has been included in the opening pages. The chapters on motive power and braking practice which follow make special reference in many instances to Belgium, but trends and examples elsewhere are mentioned wherever appropriate for purposes of comparison or to illustrate special techniques, such as the use of rubber-type vehicles in France. The present state of development in electric and diesel motive power is presented in a series of concise summaries which cover pro-

jects of such recent date as the 50-cycle electrification between Jadotville and Tenke in the Belgian Congo. Fundamentals of traction and braking practice are explained, with diagrams, so as to give the essential background without confusing the reader with technical detail, out of place in a book planned on broad lines. A useful alphabetical index of over six pages is provided.

Railway Materials Handbook.—The United Steel Companies Limited, 17, Westbourne Road, Sheffield 10: 9½ in. x 6 in. 372 pp. No price stated.—This new handbook provides a comprehensive survey of the many railway products manufactured by the United Steel Companies Limited. The activities of the group cover a very wide range of the field of railway engineering which consists of materials in either the raw or finished state. The publication is designed to supply information in precise form to railway engineers or stores superintendents. It includes sections on wheels, tyres, springs, forgings, and all types of permanent way material, with a description of the manufacturing processes appropriate to each section,

which gives the user an insight into the particular methods of manufacture. The work of the United Steel Companies' extensive Research & Development Department has resulted in the production of special steels for railway requirements which include Cor-Ten boiler plates, Hi-Core case-hardening steels, DuNic staybolt steels and Tormanc steel for locomotive motion ports. A comprehensive series of tables is included.

Holidays in France, Italy, Switzerland, Austria, and Spain and Portugal.—In the 1954 season programmes of Thos. Cook & Son Ltd. and Dean & Dawson Limited an ever-wider selection of holidays and resorts is presented. In France, Mentone and Biarritz have been specially selected this year to give the best possible value for the visitor's currency. Italian resorts where special arrangements have been made include Tremezzo-Cadenabbia, Menaggio, San Remo, and Bordighera. There is a wide range of large and small Swiss resorts where a 10-day holiday may be enjoyed for between £24 and £30. Austria and Spain both offer remarkable value for money.

*Sixteenth International Railway Congress***Methods to Increase the Efficiency of Steam Locomotives***Increase in steam pressures, superheating, pre-heating, firing rates, and feed-water treatment*

MR. C. T. LONG, Assistant Chief Mechanical Engineer (Motive Power), South African Railways, summarised the replies from railways in English-speaking countries, with British associations, or where British railway practices largely prevail, to Question 4 to be discussed next May by the International Railway Congress in London. The question relates to ways and means of improving the efficiency of steam locomotives. As the 1937 Congress brought the subject matter of Question 4 up to date as at that time, the report deals with locomotives placed in service since that year, and developments which have taken place in the intervening period.

Increase in Steam Pressure

Comparatively few of the steam locomotives, some 16 per cent in all, which have been placed in service from 1937 onwards, have been designed to work at higher pressure than had previously obtained on the railways concerned. The increases moreover in working pressure have not been of any particular magnitude.

The Indian railways having a few locomotives with pressures of 225-250 lb. per sq. in., but no particulars are given. The reasons put forward by several administrations for not increasing boiler pressure include keeping boiler maintenance figures to a minimum. The South African Railways point out that with their 3 ft. 6 in. gauge the limitations imposed by the moving structure gauge, the maximum axle loading permitted, and the adhesive factor, a boiler pressure of 225 lb. per sq. in. could not be exceeded with advantage without added complications in design.

The Indian railways alone foresee an increase in the boiler pressure used, so as to benefit by the thermal advantages, as their boiler building industry becomes established. None of the railways that replied, however, mention the possibility of putting into service anything but the conventional type of boiler.

Before 1937, the highest boiler pressure used on the South African Railways was 210 lb. per sq. in.; since 1937 the administration has placed in service 276 locomotives with pressures of 225 lb. per sq. in. On the Indonesian State Railways pressures up to 200 lb. per sq. in. were used; one hundred steam locomotives have been placed in service on that system since 1937, and have a boiler pressure of 228 lb. per sq. in.

Brief specifications of boiler materials are given in the report as used by the Danish State, South African, Victorian,

and Indian railways, but only the S.A.R. reports use of special steels, the last less from boiler pressure than from weight considerations; trouble was experienced with the cracking of boiler shells of certain locomotives, but was not caused by materials used, but were of the stress corrosion type, possibly due to oversteering in certain areas.

In the past the S.A.R. had a number of locomotives working in bad water districts equipped with copper or composite fireboxes, the latter type being copper fireboxes with steel tubeplates; with the advance in water treatment it is now the policy to replace copper by steel when firebox renewals become necessary.

As to future trends in increased boiler pressure of the railways concerned, the S.A.R. does not anticipate raising pressure above the present maximum, i.e., 225 lb. per sq. in. The Danish State Railways, however, consider that it is possible that pressures of the order of 225-285 lb. per sq. in. will be adopted.

Firegrate Design

In reply to the questionnaire on firegrate design the Victorian Railways generally use shaker grates, though later engines are equipped with the Waugh type, while the Danish State Railways report best results with the plane, inclined grate. For burning coal with a high dust content good results have been obtained on some of the smaller types of locomotives, with a deep, plane horizontal grate, raised about 4.72 in. in the centre.

After tests with various types of grates, the Indian railways have standardised the finger-pattern rocking grate, with air spaces of 1 to 1½ in., as best suited to the low grade non-coking coals used. The grate is arranged for rocking by hand in sections. The S.A.R. uses finger bars, pin-hole grates, and slotted grates. The pin-hole grate was developed on the introduction of mechanically-fired locomotives, and had no opening larger than ¼ in. to prevent waste of fuel.

The slotted type has now been developed larger than ½ in. and it is the intention to standardise this type. In recent designs, where possible, no dead grates are used, and the entire grate area is made up of rocking and drop grates, the latter being disposed centrally; a level grate is aimed at.

The coals used on the Indian railways are described as non-clinkering, and as high-grade metallurgical coking coals are limited in supply, grates have been designed to burn the lower graded coals. Lignites of fairly good quality

are available and research into their utilisation is to be undertaken.

On the Victorian Railways one locomotive has been equipped to burn pulverised brown coal for trial purposes. In South Africa, because of limitations worked to, the aim is to obtain coal with as high a calorific value and low ash content as possible, and it is not the railways intention to investigate using other types of coal. Contract specifications stipulate a minimum and maximum size of 1½ in. and 6 in. respectively.

The Indian railways have also found that a table grate with hexagonal holes, known as the honeycomb, with an air space/grate area ratio of some 30 per cent is suitable for high rates of burning with small coal, as fired with a mechanical stoker. No railways report using any special device in their ash-pans to facilitate correct distribution of air over the grate.

Mention is made by the Indian railways of experiments with secondary air with a view to minimising the losses due to unburnt particles of fuel being carried over. Apart from this on all railways air above the fire is admitted through the fire-hole door in the normal course of handling the locomotive.

Firing Rates

Experiments carried out with a South African Railways class "23" locomotive fitted with the S.A.R. standard 3B boiler show that at firing rates lower than 100 lb. per sq. ft. per hr. efficiency is lower with a 30 deg. arch than with a 28 deg. arch, due to excess air. In the normal working range between this rate of firing and the maximum of 170 lb. per sq. ft. per hr. there is an appreciable gain in efficiency with a 30 deg. arch.

Reporting railways generally agree that the maximum size grate which can be hand-fired is from 50 to 60 sq. ft. The Indian railways consider that rates of firing of 3,500 lb./hr. for a continuous period, 4,500 lb./hr. for one hour or less, and 5,200 lb./hr. for 15 to 20 minutes are the limits of a single fireman. The S.A.R. has observed firing rates up to 8,000 lb. per hour, but for periods no longer than half an hour. The railways concerned consider the better criterion to be the total coal handled per shift, and when this exceeds 20,000-22,000 lb., it is deemed essential to change to mechanical firing.

Oil Firing

Oil firing is not considered an economic proposition by the majority of railways, except where oil supplies are close at hand. All the 124 main-line locomotives on the Sudan Railways are fired with oil to the specification viscosity, Redwood I, at 100 deg. F.: 1,000 sec.

maximum, sulphur content 3.8 maximum, calorific value (gross or higher), 18,000 B.T.U.s per lb. minimum.

The Danish State Railways and the Indian railways have re-converted oil-burning locomotives to coal. Eighty-three locomotives on the Victorian Railways are equipped to burn heavy residual oil, the conversion having been caused by the shortage of black coal, rather than by economic factors.

The approach to higher superheat temperatures is conservative having regard to the possibility of lubrication difficulties and deterioration of metals at higher temperatures than are now attained. The Victorian Railways consider 650 deg. F. a reasonable temperature although temperatures of 740 deg. F. have been obtained in practice. The boiler pressures range from 175 to 210 lb. per sq. in.

The temperature of 680 deg. F. is generally obtained on the Danish State Railways at boiler pressures of 170 and 185 lb. per sq. in. The highest superheat temperature recorded on the Indian railways is 710 deg. F. at a boiler pressure of 210 lb. per sq. in. and a temperature of 730 deg. F. is aimed at with a possible increase to 750 deg. F., but caution is being observed in taking steps to achieve the higher limit, until more research has been done on grain growth in cast-iron superheater headers, and on lubrication.

The S.A.R. superheat temperature of 700-710 deg. F. is designed to be irrespective of boiler pressures. Difficulties have been experienced in ensuring adequate lubrication above 700 deg. F., and the railway does not indicate any intention of exceeding this figure in their designs.

Superheater Elements

In the maintenance of superheater elements, the policy of the Victorian Railways is to fit new elements in boilers which leave workshops for a period of four years, and to use repaired ones in two-year period boilers. The Danish State Railways give 62,000-93,000 miles as the life of elements, and that of the joints between elements and the header as barely the same. The S.A.R. reports leaking joints as by far the most common form of element trouble, followed by burst and cracked or broken elements. Replacement is heaviest in the upper row, and decreases regularly to the lowest of the four rows.

All reporting railways have gained considerably from the introduction of treatment of boiler feed water and there is evidence of the tendency to extend the policy further. Water conditions vary so widely on different systems that standardisation of methods of treatment does not at present appear feasible. Success depends on rigid control, and it is necessary to set up the organisation to ensure this.

Some railways report that water treatment has completely eliminated priming, while others state that it can be kept under satisfactory control by the use of anti-foam compounds and blowing down. The experience on the

S.A.R. is that a limit of salinity of approximately 3,000 parts per million, without using anti-foam compounds cannot be exceeded without priming, with modern polyamide type anti-foam treatment, limits of 10,000 p.p.m. are worked to. It is as yet considered inadvisable to work to higher limits in view of possible corrosion of boiler components.

With corrosion or pitting in boilers using softened water, very little is experienced by reporting railways, and then not of a serious order. The S.A.R. reports corrosion of water level glasses with high alkalinity waters, necessitating tests to obtain a glass with higher resistivity to this action. The Danish State Railways record corrosion of fusible plugs when using pure tin. It was cured by changing to an alloy with the composition 85 per cent Sn, 10 per cent Sb, and 5 per cent Cu.

Scale Formation

Corrosion is reported in South Africa of pure lead used in plugs resulting from high alkalinity as a limited factor in the extension of periods between washouts. Tannin is relied on to minimise corrosion, while tests have been carried out with electro-plating the plugs with a certain degree of success. Little scale formation in injectors, delivery pipes or boiler tubes, where the feed water enters the boiler is reported, this is ascribed to adoption of appropriate water treatment. Most railways use deflector plates.

All the reporting railways use chemical treatment of boiler feed water in some form; several methods introduce the reagent into the tender either by hand or by means of a special device, while the Danish State Railways prefer a feeder attached to storage tanks. It is the accepted practice on the S.A.R. to treat externally to the boiler by precipitation, i.e., lime-soda aluminate softening, or by base exchange (sodium cycle). Supplementary methods are also used.

With supplies treated in lime-soda softeners, basket feeders in the treated water collecting troughs or storage tanks are used to dissolve briquettes and/or wattle tannin lumps. With supplies treated in base exchange plants bypass feeders are used to dissolve tannin and fused soda ash. In other cases chemicals for internal treatment, or final conditioning are proportionately fed by (1) water motors and chemical pumps, (2) electrically driven chemical pumps, and (3) bypass feeders.

The Danish State Railways control treatment so that the water will have an excess alkalinity of 20-25 per cent while the Indian Government Railways adjust the dosage to give a pH of 9.5-10.5. On the Eastern Railway, where the hardness of water is below 12 degrees and the consumption under ten million gal. per year, bypass feeders using briquettes of alkaline reagents, with organic coagulants of the tannin/lignin type are installed at intermediate stations, linking up stations at which lime-soda

softeners are installed. Only supplies with a total hardness which is in excess of ten grains per gal. (143 p.p.m.) are considered suitable for external treatment, provided the annual consumption exceeds ten million gal. per year. The S.A.R. practice is to treat externally all water having a total hardness in excess of 200 p.p.m. Final conditioning is by means of sodium phosphate, sodium hexameta phosphate and tannin. All treatment is adjusted to give the ratio:—

$$\frac{\text{Total alkalinity expressed as CaCO}_3}{\text{Total non-incrusting solids}} = 25 \text{ per cent}$$

with excess tannin. Anti-foam compound (polyamide type) is used if it is found necessary to operate with high concentration of salinity.

Boiler Blowdown

The Victorian Railways find blowing down necessary only when the dissolved solids exceed 180 grains per gallon (2,600 p.p.m.), while the Danish State Railways experience no trouble with salinity up to 200-300 p.p.m. Cl⁻ provided anti-foam compounds are used in the treatment. The S.A.R. finds that water containing 400 p.p.m. of non-incrusting salts, treated by the addition of alkalinity (Na₂CO₃, NaOH and sodium phosphates) to take care of non-carbonate hardness and to render water non-corrosive, produces priming and blowing down is necessary.

The Indian railways use a dose of $\frac{1}{2}$ lb. (227 gms.) to 1,000 gallons of a mixture of tannin, soda ash, and soda aluminate in conjunction with a blowdown of about one minute at each watering station. The rate of blowdown on reporting railways varies. On the Danish State Railways the amount of blowdown is 4.5 per cent of water evaporated, while in India 350-400 gal. are blown down on each occasion equivalent to 15-20 per cent of water evaporated per hr. under average working conditions.

On the S.A.R. the percentage of blowdown is calculated, taking into consideration both the total non-incrusting solids in the feed-water and the total non-incrusting solids that tests have shown to be the highest safe concentration that can be carried. If the partial blowdown required is in excess of 7 per cent of the total water used, anti-foam compounds are used to reduce the blowdown necessary.

The reporting railways in general speak of considerable increase in the period between boiler washouts as a result of the adoption of water treatment. On the subject of reduced maintenance the Victorian Railways refer to an improvement of tube life from two to four years, and on the Danish State Railways the period between major boiler overhauls has been extended from four to five years. The S.A.R. reports reduction in the cost of major boiler overhauls of about 30 per cent since 1948, and states that the condition of boiler tubes has improved to the extent that the re-ending of tubes at major overhauls is now standard practice.

Handling Indian Pilgrim Traffic

Operating and telecommunication arrangements, including wireless, during the Kumbh Mela

(By a correspondent)

THE railways have arranged to carry 1,600,000 passengers from all over India to Allahabad on the bank of the Ganges, where one of the largest congregations in the world, the religious festival called the Kumbh Mela, held every twelve years, has been assembling. Its origin is from the Hindu legend that the gods carrying a sacred pitcher (*kumbh*) of nectar rested at four places on the earth, one of which is Prayag, near Allahabad. Prayag is situated at the confluence of the rivers Ganges and Jumna and an invisible third river called Saraswati. The present fair, likely to attract 5,000,000 pilgrims, is being held after 24 years, as the festival was abandoned in 1942. It has been held regularly for the last 1,200 years, the earliest first-hand description being that of the Chinese traveller Hsuan Tsang in A.D. 643.

The festival is held in three different areas separated by the Ganges and Jumna rivers. There are seven permanent railway stations in the vicinity,

namely, Allahabad, Prayag, Naini, and Phaphamau on the 5 ft. 6 in.-gauge Northern Railway; and Allahabad City, Daraganj, and Jhusi on the metre-gauge North Eastern Railway.

Special Stations for Fair

The Northern Railway has constructed two new stations, Allahabad Sangam and Prayag Ghat. The former is right in the fair area and the latter on its fringe. Facilities for handling nearly one-half the total passenger traffic have been provided at these two temporary stations. Allahabad Sangam has seven high-level platforms and 10 lines and the Prayag Ghat 12 and 10 respectively. These stations are equipped with electricity, modern sanitary arrangements, booking and inquiry offices, platform shelters, first-aid posts and food stalls.

Additional facilities on these lines have also been provided at the seven permanent stations serving the fair and at other nearby stations likely to be

used by pilgrims. To increase rail capacity and to improve amenities for passengers in the affected area, new crossing stations have been opened and other new works carried out. The normal routing of some passenger trains has been altered to avoid congestion and to provide maximum capacity for specials.

In the first phase of the festival, from January 9 to 16, 500 additional trains ran over and above the normal services and carried 250,000 pilgrims into the fair area. Of these, 150,000 had already made the return journey before January 16. The brunt of the traffic was borne by Allahabad Junction which dealt with 200,000 travellers. Shuttle services were provided between Allahabad Junction and Prayag, Prayag Ghat, and Sangam.

Passenger traffic by rail was below expectations in the first phase. The most important phase, however, is the next one from February 3, which is the most auspicious day, to February 17. The last phase of the festival is from February 17 to 20, after which traffic is expected to fall off towards the last important day on March 3.

For the peak periods certain short-term arrangements, which can be quickly put into force before the assemblage and discontinued after dispersal, have been made. These include 16 second class and 61 third class special trains from the principal cities of India, such as Delhi, Calcutta, and Bombay; and about 80 non-scheduled third class specials daily, to be run to suit traffic requirements on sections on which long-term arrangements such as additional regular trains are found inadequate.

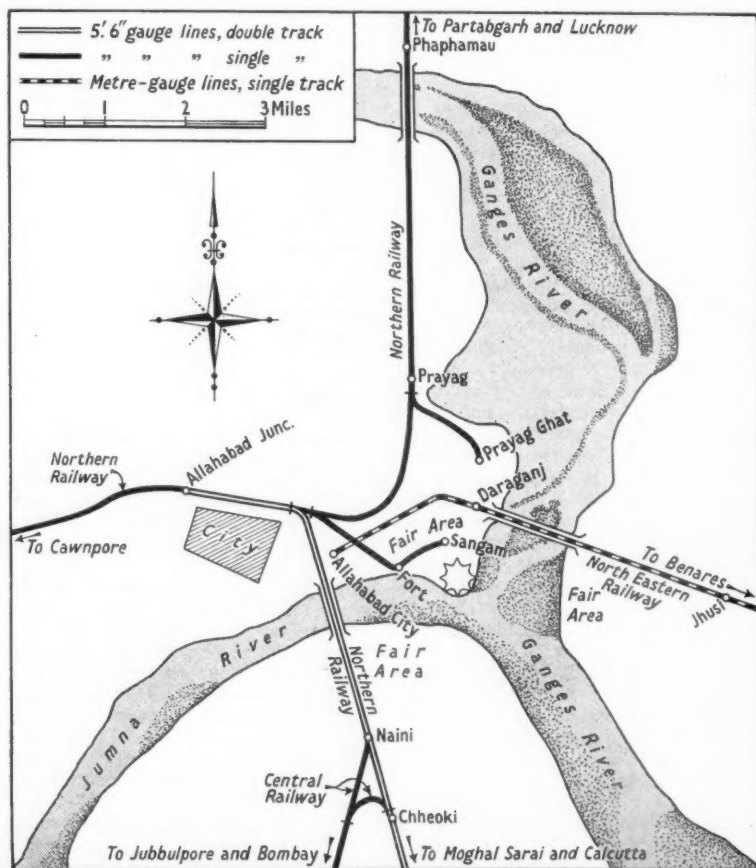
Crowd Handling

At the nine fair stations a number of large enclosures have been provided, each one designed to receive passengers for a particular train or a nominated direction. The enclosures are indicated by symbols of common objects such as a monkey, snake, axe, bicycle, or aeroplane, which are reproduced on the back of passenger tickets. All that illiterate passengers, who constitute a vast majority of the pilgrims, have to do is to look at the picture on their tickets and enter the enclosure displaying the same object.

Additional city booking offices have been opened in Allahabad and there are special inquiry offices functioning in the middle of the fair area. These announce railway arrangements through loud-speakers and give advance information to the stations as to the dispersal movements of crowds.

At Sangam and Prayag Ghat observation towers have been erected to facilitate

(Continued on page 181)



Map showing location of broad- and metre-gauge new and existing stations in relation to fair area at Allahabad

High-Capacity Stock for Swiss Federal Railways

Ninety-two seater third class steel coaches of 26.5 tons tare for suburban services



Showing arrangement of reversible seats, plastic upholstery, and longitudinal passage racks

THE first vehicles built for the Zurich suburban services were brought out in 1925-33. The Swiss Car & Elevator Manufacturing Corporation Limited of Schlieren, received instructions to develop the double or twin coaches of series C-C and B-C by rebuilding some six-wheel vehicles. These coaches, painted in blue and white, and popularly nick-named the "workmen's Pullmans," have given good service but are considered obsolete in their form of construction, wooden bodies on steel under-framing.

In the summer of 1951, two lightweight steel coaches C4ü 5461 and 5462

were experimentally fitted in the central compartments with tramcar type seats, which gave more seating capacity, though the seats themselves were often criticised as not being sufficiently comfortable.

The Swiss Federal Railways in association with the same firm in 1952 evolved new designs for a lightweight coach of maximum seating capacity with the required degree of comfort. This design was finally approved at the end of 1953. The bogies of these vehicles, of the Schlieren type, correspond to the design used commonly in the lightweight stock of series C4ü, BC4ü, and B4ü.

The body was constructed about 3 ft. 4 in. longer, to afford greater carrying capacity than with the two first experimental vehicles.

On either side there are two double doors with conveniently positioned steps giving quicker entry and egress. These folding doors are made of aluminium alloy, to a Schlieren patent.

In plan the vehicle is divided up similarly to the third class coaches C4ü hitherto used in fast suburban services with, at each end, a vestibule and a lavatory compartment.

High Seating Capacity

There are 88 seats in the main part of the coach with four in the two end vestibules totalling 92

The end compartments are arranged as smoking and the centre is non-smoking. The reversible seats are upholstered with a blue plastic material, Flexarmit, made in the Schlieren dye works. The walls of the coaches are covered with linoleum of the same colour.

Baggage racks are arranged lengthwise over the windows and on the window uprights there are smaller racks for small parcels and like articles.

Lighting, heating, ventilation, and brake equipment are of the types usually employed with Swiss lightweight vehicles, and multiple-unit control is provided enabling the coaches to run with motor coaches.

These six vehicles were designed and constructed in eight months.

Principal dimensions are:—

Length over buffers	...	...	77 ft. 9 in.
Length between bogie pivots	...	...	55 ft. 9 in.
Bogie wheelbase	...	...	8 ft. 10½ in.
Width over body	...	...	9 ft. 7 in.
Tare weight	...	...	26.5 tons

Handling Indian Pilgrim Traffic

(Concluded from page 180)

tate the regulation of the movement of crowds. These towers and other points such as control offices and station and yard masters offices are connected by a radio network.

Radio Links

There is in addition a two-way radio telephone service between Allahabad and New Delhi, the headquarters of the Northern Railway and the Railway Board, and Allahabad and Jubbulpore, a Divisional Headquarters of the Central Railway, embracing the headquarter offices controlling the broad-gauge lines converging on Allahabad.

Anti-Cholera Measures

Production of an anti-cholera inoculation certificate is required against issue of a railway ticket to one of the fair stations. Passengers are required to

present these certificates in duplicate to the booking clerk, who retains one copy and stamps the other prior to returning it to the owner.

Fares include a pilgrim tax by the Government of Uttar Pradesh State to defray the cost of arrangements other than those which have been made by the railways.

Traffic Restrictions

To prevent congestion in the Allahabad area and on approach lines and to ensure prompt handling of fair traffic certain restrictions had to be imposed on goods traffic. Passenger traffic restrictions are designed to prevent movement between any two fair stations and to minimise the density of traffic wholly within the Allahabad area. No return tickets, for instance, may be issued to Allahabad Junction from any station in the Lucknow Division of the Northern Railway, from stations in which pas-

sengers may, however, book to Phaphamau and Prayag; as all the fair stations are within 3½ miles of the fair area, this should not inconvenience pilgrims.

The festival traffic is conveyed over lines, largely single, as the map shows, which already convey a heavy goods and passenger traffic. Apart from arrangements in the immediate vicinity of Allahabad, operation of the additional trains affects traffic in distant parts of India.

A further complication is that Allahabad is a focal point in freight traffic, including coal wagons and empties between the Bengal and Bihar coalfields and Upper and Western India. The successful handling of the Kumbh Mela traffic therefore is of the utmost importance in the operation of the Indian railway system, apart from its significance on its own account in the movement of passengers without delay or inconvenience.

Torque Loading Equipment

Designed to apply a pre-set load to prevent damage when tightening nuts

CONSIDERABLE advance has been made in recent years in the types of small tools and equipment made available in all branches of the engineering industry. Especially is this so in the manufacture of diesel and diesel-electric locomotives, railcar, and transport engine units, many types of which it is now customary to erect on the line production method. Careful

ting rigs for the accurate setting of all kinds of torque spanners.

Accuracy has been the makers' principal objective in the design of Acratork equipment. The spanner depends on simple but sound engineering principles for its method of operation and once it is set to apply the load required, it will repeat that load accurately for long periods. The makers

through the agency of a spring-loaded cam.

As the spanner is moved through its arc, the nut tightens until the torque applied is equal to the pre-set load. The roller then rides out of the cam recess and further movement of the handle merely rotates the roller round the periphery of the cam without affecting the driving square. Wear is

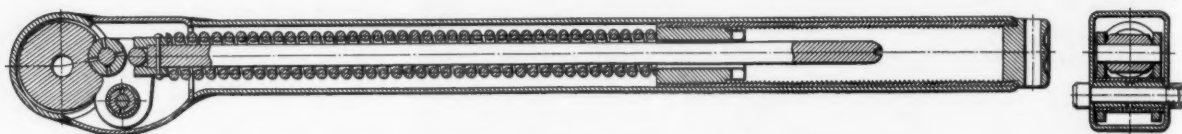


Diagram showing the spring-loaded cam action of the torque spanner

assembly of engine parts, crankshaft and connecting rod bearings, fuel pumps, gear cases, and so on, is required. On the steam locomotive, boiler mountings, injectors and other miscellaneous fittings also require to be assembled with due care.

The time and material saved by prevention of breakage of bolts and studs in assembly is of no small consequence.

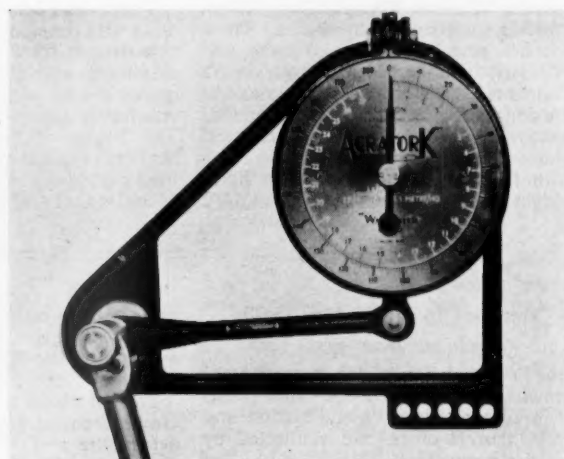
claim that after 100,000 operations at maximum load the torque tolerance would not be more than 1 per cent.

Pre-set Load

A particular advantage claimed is that with the Acratork spanner it is impossible to exceed the pre-set load and, at the same time, virtually impossible to apply less than the set loading.

said to be negligible since all working surfaces are hardened and precision ground and the interior of the spanner is filled with low temperature grease.

At present 12 standard models are available, the largest having a range of 300-850 lb./ft. Development is well advanced on a hydraulic torque generator capable of loads of up to 3,000 lb./ft. Three types of torque



Two types of load setting machines: (left) 0 to 400 lb./ft. range; (right) 0 to 200 lb./ft. range

Furthermore, there is also the advantage of eliminating a possible cause of failures in service.

In the past, suitable appliances for the fairly high torque loads frequently required in railway assembly work have not always been readily obtainable. It is, therefore, of interest to note the range of equipment recently introduced by the Acratork Engineering Co. Ltd., which comprises a series of torque limiting spanners suitable for all loads up to 850 lb./ft. and also several types of set-

This is based on the fact that at the precise moment the correct load is reached the spanner handle becomes "free." The applied load is not affected if the spanner is pulled out of square nor by very rapid or very slow operation.

This being the case, it would seem to be an eminently suitable tool for use by unskilled labour employed on repetition work.

As is shown in the accompanying diagram, the desired loading is obtained

setting equipment are available suitable for setting or testing all types of torque wrenches.

The two machines shown in the accompanying illustrations have capacities of 0-400 lb./ft. and 0-200 lb./ft. respectively, while a larger model has a range of up to 1,000 lb./ft. or higher.

The setting rigs are calibrated in both the English and the metric systems and have been specially designed for either wall or bench mounting.

North British Mikado-Type Locomotives for Spain

Broad-gauge main line engines for mixed-traffic operating

IN May, 1953, the North British Locomotive Co. Ltd., Glasgow, delivered the first of an order for 25 2-8-2 type tender locomotives for the Red Nacional de los Ferrocarriles Espanoles. These locomotives were conveyed by road wagon to Glasgow Docks and shipped in the fully-erected condition to Bilbao. The locomotives, which are for mixed-traffic operation, have been built to the requirements of Senor Don Armando R. Flobert of the Departamento de Material y Traccion, and under the inspection of Messrs. Livesey & Henderson, Moor-gate, London, E.C.2. One hundred locomotives to the same design are being built in Spain and the bulk of the material for their manufacture is being supplied by North British Locomotive Co. Ltd.

Boiler Design

The boiler barrel with external diameters at front and rear of 1,828 mm. and 1,900 mm. respectively, consists of three rings. The longitudinal seams are quadruple riveted with inside and outside butt strips and the circumferential

seams double riveted. The boiler is fitted with 125 boiler tubes of 55 mm. outside diameter and 34 flue tubes of 143 mm. outside diameter.

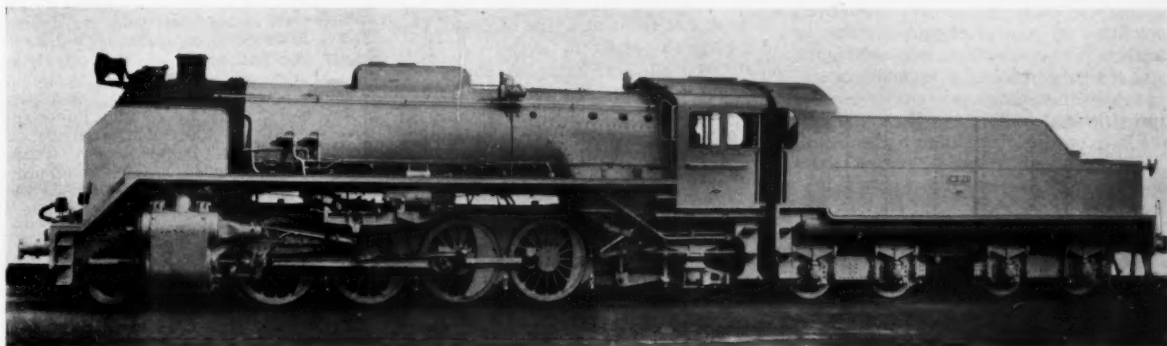
The distance between the tube plates is 5,485 mm. and the smokebox tube-plate is attached to the boiler barrel by means of a solid-rolled angle ring and stayed above the tubes by braces to the first barrel. The outer firebox back plate is supported by flanged brace plates to the outer wrapper plate.

The plates of the inner firebox and combustion chamber are of copper and the water space stays, with tell-tale holes, are also of copper with flexible steel stays at the combustion chamber and in the breaking zones. The firebox outside shell is of the round top radial-stayed type fitted with direct steel roof stays screwed into both inner and outer wrapper plates and secured at the inner plate by copper washers and steel nuts. Four rows of sling stays are also fitted at the front of the box to allow for expansion. The brick arch is supported on four arch tubes of 76 mm. outside diameter.

A 34 element Melesco superheater equipped with anti-vacuum valve is fitted and the Joco regulator situated in the dome is operated by a trigger control working in a quadrant. Asbestos mattresses are applied to the firebox and millboard to the boiler back plate. The boiler and firebox shell are fitted with crinoline bars and hoops on which mild steel plates are secured by steel bands. The cylinders are also lagged with asbestos mattresses and covered with mild steel sheets.

The firegrate is of the Equi type; the drop grate is operated by hand, and the rocking grate by means of an Equi steam cylinder. The ashpan is of all-welded construction equipped with front and hind air doors, a single hopper door and is provided with ash drench fittings.

General steam fittings include two Gresham & Craven R.C.W. injectors, two sets of steam and feed valves and clackboxes with stop cocks, one Worthington feed pump and heater 2½ AX type complete, one set water gauges with Klinger type glasses, one "Joco" type regulator, two Ross Pop



North British-built Mikado-type locomotive for mixed-traffic operating

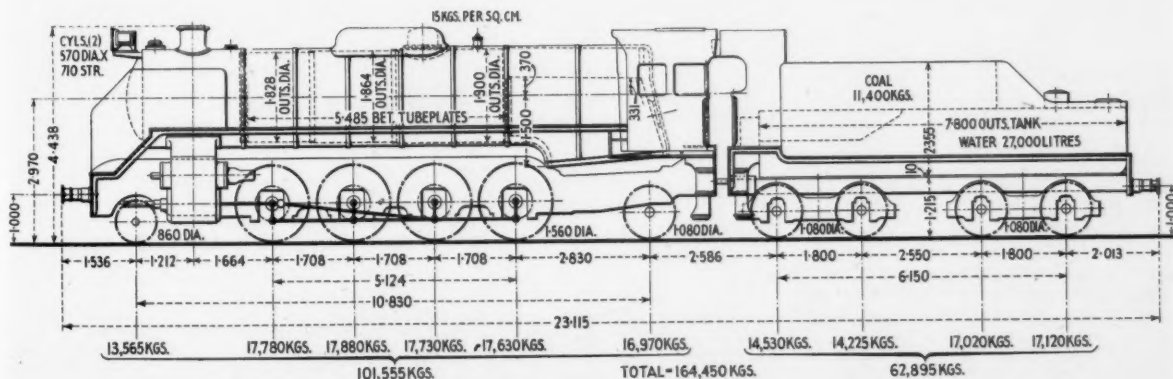


Diagram showing the principal weights and dimensions of the locomotive

safety valves, one Everlasting blow-off cock, one Clyde soot blower, one blower valve, one whistle with valve and one steam stand complete with all necessary valves.

The boiler is supported at the front and rear of the firebox by oil-lubricated expansion shoes attached to the foundation ring, contact being maintained with bearing slides fixed to the frame cross stays by holding down clips. The cylindrical smokebox has a cast-iron chimney and blast pipe with a Kylala Kylchap single-exhaust type system fitted with a spark arrestor of the basket type.

Engine Particulars

The main plate frames are cut from rolled plate and finished to a thickness of 30 mm. Front and hind dragboxes and cross stretchers are of flanged steel plates and angles, of robust construction and a centre racking plate is provided. The smokebox saddle, slidebar brackets, reversing-link trunnion brackets, stretcher at front of firebox and draw-pin casting, incorporated in the hind dragbox, are of steel castings.

The platform plates are of steel supported by brackets attached to the boiler, giving easy access to boiler and smokebox fittings, while carrying the larger pipes of the Worthington pump below the platform. Smoke deflection plates are fitted on each side of the smokebox. Side buffers and drawhooks are fitted at front of engine and rear of tender. The connections between engine and tender consist of a ratchet type adjustable draw bar, safety chains and spring-loaded buffers bearing on a facing strip on the engine hind buffer beam.

The coupled axlebox guides, axleboxes and hornclips are steel castings and axlebox bearings are of gunmetal lined with whitmetal. The adjustable wedges and liners are steel forgings. Laminated bearing springs of the overhung type are fitted and spring compensation is arranged in two groups, between front truck, leading and intermediate wheels, and driving, trailing and hind truck wheels. Lubrication of the coupled axleboxes is by means of one eight-feed Silvertown mechanical lubricator and the guides are lubricated from oilboxes situated on the frame.

The coupled wheel centres are steel castings of the spoke type and the tyres are manufactured to the railway's standard profile, and secured in position by tyre retaining rings. The whole of the revolving masses and 33½ per cent of the reciprocating masses are balanced. The inner hub faces of the wheels are fitted with renewable bronze liners.

The cylinders, of the piston valve type, are made of the best quality, hard close-grained cast iron, and fitted with cast-iron barrel-liners. The hind covers are steel castings, while the front covers are of cast iron with breaking grooves. The piston rods incorporating tail rods are made of steel carefully machined and ground and the piston heads are of forged steel and fitted with three broad

cast-iron rings. Non-chatter bypass valves are fitted to the steam chests and piston rod packing is of the Hauber type. Lubrication of the cylinders is by means of one ten-feed Silvertown mechanical lubricator with connections to steam chests, cylinder barrels, tail rods and packings.

Leaded-bronze floating bushes, lubricated by oil, are fitted to the coupling and connecting rods. The motion gear has bronze bushes, and Skefko roller bearings are applied to the ends of the eccentric rods. Hand screw reversing gear is provided and the reversing rod, made of weldless steel tubing, is supported by brackets attached to the boiler.

The leading truck is of the swing-link type fitted with Skefko cannon type roller-bearing axleboxes. The load is applied centrally from the compensating beam to the swing links, through laminated bearing springs. The leading and trailing truck wheel centres are of the rolled disc type with tyres secured in position by tyre retaining rings. The hind truck is of the radial arm design with outside Skefko roller bearings and spring side control gear. The total side play of the leading and trailing trucks is 190 mm. and 140 mm. respectively, which permits the locomotive to negotiate curves of 175 m. radius.

The cab is of riveted construction with a ventilator in the roof and further ventilation is provided through the windows at front and side of cab. The enginemen's platform rests on eight laminated springs acting as shock absorbers. Steam brake equipment is fitted on the engine and operates blocks on the rear of all coupled wheels. A counter pressure brake valve is also fitted. Vacuum brake is provided for the tender and train, the ejector being Gresham & Craven's S.J. type with graduated steam brake valve Mark IV attached.

Efficient means of gravity sanding are provided to sand at front of leading and trailing coupled wheels and the sandbox is mounted on the boiler barrel adjacent to the dome with gearing operated by hand from the cab. J. Stone & Co. (Deptford) Ltd. supplied the electric lighting equipment, which includes a 14 in. Tonum B.E. headlight, cab lamps for lubricator, water gauge, pressure gauge and a lamp to illuminate the cab.

Standard Tender

The tender is built to the railway's standard practice and is interchangeable with existing tenders. The tank and bunker are of riveted construction having coal and water capacities of 11,400 kgs. and 27,000 litres respectively. The tender underframe is built up of longitudinal channels and is well stayed in all directions by cross channels, steel plates, and sections. The bogie frames are built up from plate and channel with attachments for brake and spring gear. The axlebox guides are of steel casting and Skefko roller-bearing axleboxes are fitted. The wheel centres are steel castings of the spoke design with tyres

secured by retaining rings. The principal dimensions of the locomotives are as follows:—

Cylinder dia.	570 mm.
Stroke	710 mm.
Wheels, coupled, dia.	1,560 mm.
Wheels, leading truck, dia.	860 mm.
Wheels, trailing truck, dia.	1,080 mm.
Wheels, tender bogie, dia.	1,080 mm.
Wheelbase, coupled	5,124 mm.
Wheelbase, engine	10,830 mm.
Wheelbase, engine and tender	19,566 mm.
Height, rail level to boiler centre ...	2,970 mm.
Height, rail level to top of chimney	4,438 mm.
Heating surface:—	
Tubes	187 sq. m.
Firebox, including arch tubes	20.5 "
Total evaporative	207.5 "
Superheater	72.0 "
Total	279.5 "
Grate area	4.8 "
Working pressure	15 kg. per sq. cm.
Tank capacity	27,000 litres
Coal capacity	11,400 kg.
Weight, engine in working order ...	101,555 kg.
Weight, tender in working order ...	62,895 kg.
Total weight, engine and tender in working order	164,450 kg.
Tractive effort at 85 per cent working pressure	18,860 kg.

SAFE-DRIVING AWARDS FOR B.R.S. DRIVERS.

—Major-General G. N. Russell, Chairman of British Road Services, on January 28 presented awards of the Royal Society for the Prevention of Accidents to 26 B.R.S. drivers for periods of 25-32 years' safe driving without blameworthy accident or conviction for traffic offences. Congratulating the men, he said the British Transport Commission was very proud of the contribution to road safety by the staff of British Road Services, particularly drivers. In the last two years, whilst accidents in the country as a whole had shown a serious increase, the number involving B.R.S. had decreased markedly. Important developments, he added, had been the introduction of their comprehensive system of reporting and investigating all road accidents and their system of preventive vehicle maintenance. Accidents due to mechanical failure now were not more than 2 per cent of the total. B.R.S. had spent £15,000,000 in the past three years on modern vehicles, incorporating many devices to increase safety and efficiency.

ABANDONMENT OF NORTHERN LINE EXTENSIONS.

—As part of the 1935-40 new works programme, it was intended to extend the Northern Line beyond Edgware to Bushey Heath and electrify the section between Mill Hill East and Edgware. These works had to be deferred because of the war. After the war, the proposals were reviewed in the light of circumstances, including the Green Belt scheme. In November, 1950, London Transport announced that no justification existed then for extending the line beyond Edgware to Bushey Heath and that this part of the scheme would be abandoned or curtailed. The extension from Edgware to Brockley Hill, and electrification beyond Mill Hill East to either Edgware or Mill Hill (The Hale), might be contemplated later. It is now clear that no further major housing development is intended in the area which would be served by the extension and electrification as originally proposed. Meanwhile costs of construction and operation have risen so much that the traffic which might arise would be inadequate to justify the high construction and running costs. London Transport has accordingly decided, with the concurrence of the British Transport Commission, that the works be abandoned.

Improvements at Fenchurch Street Station, Eastern Region

Adoption of new form of lighting fitting which ensures maximum controlled illumination and ease of maintenance

THE Eastern Region has carried out improvements at Fenchurch Street Station which include new lighting for the concourse, platforms, and subway, and the provision of a new ladies' waiting room. It is the first main line station to be lit by a new form of lighting fitting which uses cold cathode fluorescent tubes with protective diffusers of Perspex, and has been developed by Ionlite Limited, a branch of the Falk organisation, in co-operation with the Plastics Division of Imperial Chemical Industries Limited. The large fitting used in the concourse and over the platforms where they are spanned by the overall roof, is known as the Hilite; it is designed so that some upward light augments the general brightness.

The Hilite fittings, totally enclosed, each consist of a plastic sphere approximately 37 in. in diameter, moulded in two sections, the top half in 040 Perspex and the lower half in 030 Perspex. Each fitting is equipped with six sections of 22 mm. fluorescent off-white tubing approximately 38 ft. in all, a light output of approximately 9,600 lumens.

The tubing is controlled by two double-wound high-reactance transformers. Suspension is by a 2 in. dia. metal tube running through the centre of the bowl, to which is attached a sheet metal tray carrying the control gear. Approximate consumption per fitting, including control year losses, is 390 watts.

This fitting has been designed primarily for ease of maintenance; dirt and fumes cannot enter the interior, and the outside is easily cleaned. A minimum of metal parts has been used to reduce liability to the corrosive effects of sulphurous fumes and there is no breakable glass. The design gives controlled spherical light distribution with a noticeably higher output in the lower hemisphere.

To economise in wiring a single 8 ft. lighting unit has been adopted for the platform awnings which extend beyond the overall roof. The Mark 4b fittings used here carry three 22 mm. fluorescent off-white tubes, each with a luminous length of approximately 7 ft. 1 in. giving an average light output of approximately 5,250 lumens.

A double-wound high-reactance type transformer is mounted in the centre of each fitting and contained in a sheet steel case, filled with a high melting point compound.



Hilite fittings illuminating the concourse and platforms, with smaller units over barriers



Part of station under the overall roof illuminated by Hilite fittings

The fittings for platform lighting are provided with a 030 Perspex diffuser cover, which is lettered on each side to read "Fenchurch Street" in 4 in. Gill Sans letters. The fittings of this type installed in the booking hall do not carry lettering on the Perspex diffuser. Approximate consumption per fitting, including control gear losses, is 240 watts.

Illumination of Stairways

For lighting the stairways and passages smaller units have been used, Mark 9 fittings, 5 ft. 11 in. long overall. They carry a twin fluorescent off-white tube with a luminous length of 4 ft. 11 in. giving an average light output of approximately 2,625 lumens. A double-wound high-reactance transformer fitted with a high melting point compound, is contained within the body of the fitting. Approximate consump-



tion per fitting, including control gear losses, is 105 watts.

The new waiting room for ladies provides seating for 20 passengers, with 10 upholstered arm chairs and an upholstered wall seat. A mural by Mrs. Enid Robbie depicts features of the area served by the former L.T.S.R. Central heating is installed throughout the waiting room.

Lighting fitting under platform awning incorporating station name

Sir Brian Robertson's Visit to South Wales



At the Angel Hotel, Cardiff, before dinner on February 4. Front row (left to right): Sir Robert Webber, Managing Director, "Western Mail" and "South Wales Echo"; Sir Reginald Hill, Chairman, Docks & Inland Waterways Board of Management; Sir James Collins, Lord Mayor of Cardiff; Mr. K. W. C. Grand, Chief Regional Manager, Western Region; Sir Brian Robertson, Chairman, British Transport Commission; Sir Herbert Merrett, Chairman, Cory Bros. & Co. Ltd.; Captain H. Leighton Davies, Assistant Managing Director, the Steel Company of Wales Limited

Also shown are: Messrs. F. A. Pope, Member, B.T.C.; H. H. Swift, S. Wales Area Officer, M. G. R. Smith, Civil Engineer, and C. J. Rider, Public Relations & Publicity Officer, Western Region; A. E. H. Brown, Chief Docks Manager, S. Wales; C. Barrington, Member, Board of Management, and J. Freeguard, Divisional Manager, British Road Services; N. R. R. Brooke, Managing Director, Guest Keen & Nettlefolds Limited; W. F. Cartwright, General Manager, the Steel Company of Wales Limited; J. W. Duncan, Chairman, Penarth Ship Repairing Co. Ltd.; Colonel J. G. Gaskell, Managing Director, William Hancock & Co. Ltd.; Messrs. C. R. Hodgson, Regional Transport Commissioner, S. Wales; W. G. Hopkins, Deputy Town Clerk of Cardiff; A. M. C. Jenour, President, Cardiff Chamber of Commerce; T. Jolly and C. R. Wheeler, Joint Managing Directors, Guest Keen & Baldwins Iron & Steel Co. Ltd.; Colonel Sir Godfrey Llewellyn, Chairman, T.A. Association, Glamorganshire; Messrs. T. Mervyn Jones, Chairman, Wales Gas Board; D. Prosser, Editor, Western Mail; D. M. Rees, Chairman, S.W. Division, National Coal Board; Sir Llewellyn T. G. Soulsby, Chairman, Mount Stewart Dry Docks Limited; Mr. R. G. M. Street, Chairman, Transport Users' Consultative Committee for Wales; Sir Percy Thomas, Chairman, Welsh Board for Industry

RAILWAY NEWS SECTION

PERSONAL

The following retirement and appointments have been announced by the Nigerian Railway:—

Mr. W. H. J. Moull, Assistant Chief Superintendent (Power), proceeded on retirement leave on December 22.

Mr. S. Marchant has been appointed District Superintendent.

Messrs. C. W. Hunter and A. H. Marley have been appointed Assistant District Superintendents.

Mr. James Cairns, who, as recorded in our October 16 issue, has been appointed Assistant General Manager, Tasmanian Government Railways, entered the service

C.I.E. His new appointment became effective on February 1.

Mr. P. MacLoughlin, B.E., who has been appointed Assistant Chief Mechanical Engineers (Works), Inchicore Works, Coras Iompair Eireann, was born in 1922 and educated at Colaiste Muire, Parnell Square, and University College, Dublin. In 1944 he joined the staff of the Emergency Research Bureau and entered the Electricity Supply Board as a trainee in the Board's Engineering Section in 1945. He was appointed Maintenance Engineer at the Tigeon House in 1947 and subsequently became Assistant Station Superintendent during the construction of the Erne Generating Stations.

Mr. V. C. Palmer, Superintendent of the Detroit Division of the Grand Trunk Western Railroad, has been appointed Assistant to the Vice-President & General Manager of the Grand Trunk Western Railroad, with effect from February 1. He will succeed Mr. A. J. Gignac, who has retired after 34 years' service.

The following is an extract from the Supplement dated January 22, 1954, to *The London Gazette* of January 19, 1954:

Regular Army

Brigadier R. F. K. Belchem, C.B., C.B.E. D.S.O. (49798), late R.A.C. retires on retired pay, December 18, 1953, and is granted the honorary rank of Major-General.



Mr. James Cairns

Assistant General Manager & Secretary,
Tasmanian Government Railways



Mr. J. N. Vincent

Appointed Manager, Passenger Service Bureau,
Canadian National Railways



Mr. G. Wynne Davies

Appointed Assistant Commercial Superintendent,
Southern Region, British Railways

of the Tasmanian Government Railway at Hobart on October 15, 1908, as a Messenger in the Telegraph Office. Two years later, he was transferred to the Accounts Office as a Junior Clerk. On September 13, 1913, he was appointed to the General Manager's Office as Junior Clerk and he has served continuously in that office under 14 General Managers and Commissioners. On March 7, 1947, Mr. Cairns was appointed to the position of Secretary for Railways and, on September 1, 1953, he became Assistant General Manager & Secretary for Railways.

Mr. L. Collins, B.E., B.Sc., who has been appointed Assistant Chief Mechanical Engineer, Inchicore Works, Coras Iompair Eireann, was born in Co. Dublin in 1917, and educated at Presentation College, Glashule, and University College Dublin. Having spent some years with the British Thomson-Houston Co. Ltd. at Rugby he returned to University College, Dublin, as a Demonstrator in Mechanical Engineering before joining the Turf Development Board as Junior Mechanical Engineer in 1942. He was appointed to the position of Assistant Chief Engineer in June, 1944, and, on the formation of Bord na Mona in 1946, he became Chief Mechanical Engineer, a position he held until taking up his present appointment with

Mr. J. N. Vincent, Assistant Passenger Traffic Manager, Canadian National Railways, who, as recorded in our November 13, 1953, issue, has been appointed Manager of the Passenger Service Bureau, was born in Montreal in 1900. He entered the Passenger Traffic Department of the C.N.R. there in 1920. Mr. Vincent acquired a thorough knowledge of passenger traffic matters in numerous clerical positions and became Travelling Passenger Agent in 1938, Special Passenger Agent in 1944, and Assistant to General Passenger Traffic Manager in 1951. He was appointed Assistant Passenger Traffic Manager later in the same year.

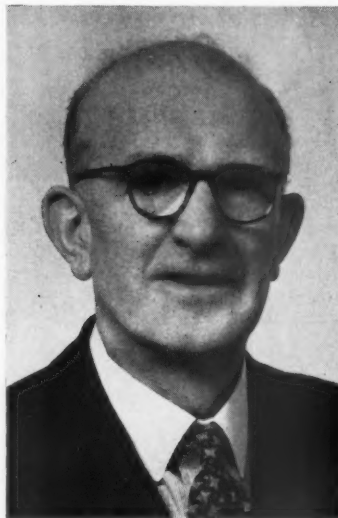
Mr. Bernard Faughnan, Assistant Works Manager (Car), Angus Shops, Canadian Pacific Railway, who, as recorded in our February 5 issue, has retired, has completed 45 years service with the C.P.R. He began his career at Place Viger in 1908, and, after military service with the 3rd Contingent in the 1914-18 war, he became Assistant Foreman at the Glen Yards. Later that year he moved to Angus Shops as Assistant General Foreman in the Passenger Car Department, transferring in 1920 to the position of General Foreman in the Freight Car Department at Angus, the post he held until becoming Assistant Works Manager.

Mr. G. Wynne Davies, O.B.E., E.R.D., M.A., M.Inst.T., who, as recorded in our February 12 issue, has been appointed Assistant Commercial Superintendent, South Region, British Railways, was educated at Repton and Clare College, Cambridge. He joined the Southern Railway in 1926, and, in 1928, was selected as one of the first of its cadets. After four years' training in all departments he was appointed Assistant to the Road Transport Liaison Officer in 1932. In 1935 he became Assistant to the London (East) Divisional Superintendent; in 1938 he became General Purposes Officer to the General Manager; and in 1939 he went to the Secretary's office, where he was subsequently appointed Assistant Secretary to the company. Mr. Wynne Davies had held a commission in the Royal Engineers (Supplementary Reserve) before the war, and, on September 4, 1939, he proceeded to France with G.H.Q., B.E.F. Subsequently he served on the staff of G.H.Q. Home Forces A.F.H.Q., and H.Q., Eighth Army in North Africa and Italy, during which time he was mentioned in despatches four times and awarded an O.B.E. (Military Division). He left the Army in September, 1945, with the rank of Colonel. On his return to the Southern Railway he became Assistant Public Relations & Advertising Officer,



Mr. E. D. Trask

Appointed Motive Power Superintendent,
Eastern Region, British Railways



Mr. W. H. Underwood

Appointed District Motive Power Superintendent,
Glasgow (South), Scottish Region



Mr. M. J. Wardle

Appointed District Engineer,
Bradford, North Eastern Region

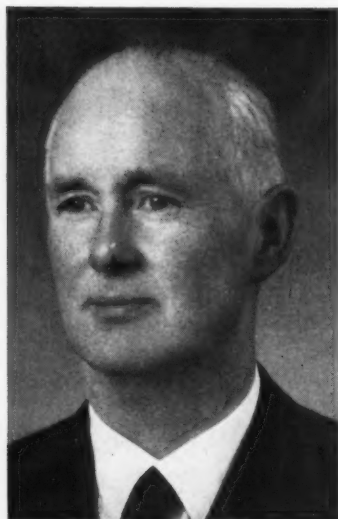
until he assumed the responsibilities of the Public Relations & Advertising Officer, Southern Region, British Railways. From October, 1948, until October, 1953, he was Publicity Officer to the Railway Executive.

Mr. E. D. Trask, M.I.Mech.E., M.I.Loco.E., Motive Power Superintendent, Scottish Region, British Railways, who, as recorded in our February 5 issue, has been appointed Motive Power Superintendent, Eastern Region, as from February 1 of this year, began his career at Doncaster Works in 1911 under the late Sir Nigel Gresley. During the 1914-18 war he was associated with the Yeomanry and served overseas with the Queen's Own Yorkshire Dragoons. In 1916 he was commissioned with the Royal Field Artillery and later transferred to the Royal Flying Corps to become an instructor in flying with the Royal Air Force. After being demobilised he rejoined

the former Great Northern Railway at Ardsley (Leeds), subsequently being stationed at Kings Cross. In 1923 he was appointed Assistant District Locomotive Superintendent, Neasden. Three years later he became a Technical Assistant to Mr. MacClure, the Southern Area (L.N.E.R.) Locomotive Running Superintendent. After service at Grantham and Peterborough, Mr. Trask was appointed District Locomotive Superintendent, Gateshead, in 1934. In 1937 he took up the appointment of District Locomotive Superintendent to the combined districts of York and Leeds and, in 1938, became the Locomotive Running Superintendent of the Scottish Area of the London & North Eastern Railway. During the 1939-45 war he was actively associated with the Home Guard and commanded the 10th Batn. of The Royal Scots (H.G.). Upon nationalisation of the railways Mr. Trask was made Assistant Motive Power Superin-

tendent for the Scottish Region and, in January, 1951, he became Motive Power Superintendent, the position he now vacates.

Mr. W. H. Underwood, M.B.E., A.I.Loco.E., Assistant (Maintenance) to Motive Power Superintendent, Scottish Region, who, as recorded in our January 29 issue, has been appointed District Motive Power Superintendent, Glasgow (South), entered the service of the North British Railway as a fitter in the Mechanical Engineer's Department at Burntisland in 1919. After service in the Locomotive Running Department at Kippis, Mr. Underwood was appointed Shedmaster, Helensburgh, in 1931, three years later becoming Shedmaster, Stobcross. In 1939 he was promoted to be Headquarters Technical Inspector to the Motive Power Superintendent, L.N.E.R., Edinburgh, and, in 1941, he was appointed Assistant Dis-



Mr. J. B. Faulkner

Appointed Estate & Rating Surveyor,
L.M. Region, British Railways



Mr. R. C. Hider

Appointed a Divisional Superintendent,
London Transport Executive



Mr. C. C. H. Wade

Chairman, Internal Combustion Engine Group,
Locomotive Manufacturers' Association

district Motive Power Superintendent, Western District, Glasgow. Following a period, in 1945, as acting District Motive Power Superintendent, Burntisland, Mr. Underwood was Assistant District Motive Power Superintendent, Glasgow (North), until in 1951 he became Assistant (Maintenance) to Motive Power Superintendent, Scottish Region, the position he now relinquishes. Mr. Underwood served for four years in France with the Royal Engineers in the 1914-18 war, and in the last war commanded the 8th City of Glasgow (L.N.E.R.) Home Guard Battalion.

Mr. M. J. Wardle, Assistant District Engineer, Leeds, North Eastern Region, British Transport Commission, who, as recorded in our January 29 issue, has been appointed District Engineer, Bradford, was educated at the Crypt School, Gloucester. Mr. Wardle served as an articled pupil to a Civil Engineer in private practice, and joined the staff of a large public works and railway contractor at Doncaster. In 1929 he joined the London Midland & Scottish Railway in the New Works office of the Divisional Engineer, Derby. He was Assistant Resident Engineer on the widening and electrification of sections of the London, Tilbury & Southend line between Barking and Upminster, on the construction of new stations at Leigh-on-Sea and Chalkwell, and on extensive works at Shoeburyness. As Resident Engineer, he supervised the reconstruction in 1933 of four large viaducts over the River Derwent just outside Derby, and was subsequently engaged on the reconstruction of Leeds City Station and Attercliffe Viaduct, Sheffield. Early in 1939 he was appointed Resident Engineer on the reconstruction of Carnforth station and Motive Power Depot; on the outbreak of war he was in charge of the construction by Direct Labour of a Branch line on the Morecambe to Heysham line to the new I.C.I. Works at Heysham, later becoming Resident Engineer, Castle Donnington, on the reconstruction of two bridges over the River Trent. In 1945 Mr. Wardle became Assistant District Engineer, Leeds, where he remained until his appointment to District Engineer at Bradford in 1953.

Mr. J. B. Faulkner, Assistant Estate Manager & Rating Agent, London Midland Region, British Railways, who, as recorded in our February 5 issue, has been appointed Estate & Rating Surveyor of that Region, entered the service of the former L.N.W.R. in 1908 as a junior draughtsman in the Headquarters Office of the Estate Department at Euston. During the 1914-18 war Mr. Faulkner served in France with the Middlesex Regiment and was granted commissioned rank. Upon the grouping of the railways in 1923 he was appointed Surveyor Assistant in the office of the Divisional Estate Agent for the London area of the L.M.S., and some two years later he returned to Head Office as Valuer. In 1929 Mr. Faulkner became Head of the General Section of the Department and, in 1943, he went to Glasgow as Divisional Land & Estate Agent for the Scottish Area. He returned to Euston in 1946 on being appointed Assistant Estate Manager, becoming Assistant Estate Manager & Rating Agent in 1947. Mr. Faulkner was elected a Professional Associate of the Royal Institution of Chartered Surveyors in 1918, and became a Fellow in 1928.

Mr. J. E. Jackson, A.R.I.C.S., District Estate Surveyor, Retford, Eastern Region, British Railways, who retired on December

23, 1953, completed more than fifty years' service on that date. He entered the service of the former Great Central Railway at Guide Bridge in 1903, and shortly afterwards was transferred to the Estate and Rating Surveyor's Office at Manchester. In 1933, he was appointed to a position in the Drawing Office of the Estate & Rating Surveyor, L.N.E.R., at Liverpool Street and, in 1938, he returned to the Manchester District Office as Assistant District Estate Agent. Mr. Jackson was appointed District Estate Surveyor, Manchester, in 1949, and transferred with that office to Retford in December, 1950.

Mr. R. C. Hider, M.B.E., B.Com., M.Inst.T., Superintendent (Traffic), London Transport Executive, who, as recorded in our February 5 issue, has been appointed Divisional Superintendent "A" Division (Metropolitan & Bakerloo Lines), in the Department of the Operating Manager (Railways) of the London Transport Executive, is 49. He entered the service of the Metropolitan Railway in 1921 and, after gaining experience in all departments, was attached to the office of the Traffic Manager for special duties. After the formation of the London Passenger Transport Board in 1933 he served as a Divisional Inspector, first on the Bakerloo and Central London Lines and then with the Metropolitan, until his appointment in 1938 as Assistant District Traffic Superintendent (Metropolitan & Bakerloo Lines). He was promoted to be District Traffic Superintendent the next year and remained at Baker Street until 1947, when he was transferred to Earls Court to take charge of the District and Piccadilly Lines. On the re-organisation of the Railway Operating Department in 1948, he was appointed to the new position of Superintendent (Traffic) at Head Office.

Mr. C. C. H. Wade, Manager of Traction Sales & Contracts, English Electric Co. Ltd., who, as recorded in our February 5 issue, has been elected Chairman of the Internal Combustion Engine Group of the Locomotive Manufacturers' Association, became a student-apprentice with that company at Preston in 1922. Previously, he had obtained a diploma in electrical engineering and applied physics at the City & Guilds (Finsbury) Engineering College. In 1924 he became Assistant Resident Engineer for the English Electric Company on the construction of rotary-converter substations for the Southern Railway. From 1925 to 1935 he carried out various duties in the Traction Department of the English Electric Company, and, from 1935 to 1938, he was Resident Engineer for that company on the electrification of railways in Poland. Mr. Wade subsequently received the following appointments with the English Electric Company:—Chief Traction Projects Engineer (1938); Works Superintendent, Plant & Transformer Works, Stafford (1940); Works Manager, Plant & Transformer Works, Stafford (1943); and Deputy Manager, Traction Department (1945). He became Manager of Traction Sales & Contracts in 1948. Mr. Wade was elected a Member of the Council of the Institution of Locomotive Engineers on April 15, 1953.

Mr. R. W. Jolley, head of the administration of advertising on road vehicles, has been appointed Sales Promotion Officer in the Commercial Advertisement Division of the Department of the Chief Public Relations & Publicity Officer, British Transport Commission. Mr. Jolley

has been connected with transport since 1927. During the 1939-45 war he served in Malaya. After the cessation of hostilities he entered the Organisation & Methods Office of the London Transport Executive. He assisted in organising the Commercial Advertisement Division in 1949, joined the Division in 1950, and became head of the administration of advertising on road vehicles in 1951.

Mr. J. P. Laurens, Chief Superintendent (Staff), South African Railways, has been appointed System Manager at Johannesburg.

Mr. J. H. Collier-Wright, Assistant Chief Commercial Superintendent, East African Railways & Harbours, is in this country on leave. He will shortly leave for Canada, where he will remain until the end of March, after which he returns to this country for the remainder of his leave.

Mr. W. E. McCall, Assistant Manager of the Passenger Service Bureau, Canadian National Railways, who, as recorded in our November 13, 1953, issue, has been appointed Assistant Passenger Traffic Manager, joined the Passenger Department of the C.N.R. at Winnipeg in 1917. He transferred to Edmonton as Chief Clerk in 1926 and returned to Winnipeg as Passenger Traffic Representative in 1936. He was promoted to be Travelling Passenger Agent in 1946 and served at Edmonton and Winnipeg before becoming District Passenger Agent at Winnipeg in 1951. Mr. McCall was appointed Assistant Manager of the Passenger Service Bureau at Montreal in 1952.

The following appointments have been announced by the London Midland Region of British Railways:—

Mr. E. S. Hunt, Assistant Chief Regional Officer, to be Assistant Chief Regional Manager.

Mr. S. T. Clayton, Assistant Motive Power Superintendent, to be Motive Power Superintendent.

Mr. B. Adkinson, Acting Motive Power Superintendent, Liverpool Street, Eastern Region, to be Assistant Motive Power Superintendent, London Midland Region.

Mr. G. E. Beynon, Assistant Chief of Police (Administration), London Area, British Transport Commission, has been appointed Chief of Police, Northern Area, with headquarters at York.

Mr. F. Grundy, Assistant Commercial Superintendent, Western Region, British Railways, has been appointed Commercial Superintendent, North Eastern Region.

Mr. E. J. Larkin, A.M.I.Mech.E., M.I.Loco.E., who has been acting as Assistant Mechanical & Electrical Engineer, Derby, London Midland Region, since December, 1952, has been confirmed in that position.

Mr. Oliver Thomas, Manager of the Materials Handling Department, Fraser & Chalmers Works of the General Electric Co. Ltd., has retired after nearly 52 years' service with the company. He has been succeeded by Mr. B. S. Pelton.

Mr. Hamish Ferguson has retired from the secretaryship of the Diesel Engine Users Association and is continuing his consulting practice from 2, Northcote

Avenue, Ealing, W.5. (Telephone: Ealing 5482.)

We regret to record the death, on Friday, January 22, 1954, of Mr. M. W. Ronayne, Manager of the Zinc and Iron-work Departments of G. A. Harvey & Co. (London) Ltd.

Mr. J. E. Sunderland, A.C.A., has been made Director & General Manager of Enfield Cables Limited. Mr. M. J. Smith, O.B.E., B.Sc. (Eng.), D.F.H. (Hons.), A.M.I.E.E., has been appointed Technical Director of the company.

Mr. H. H. Richardson and Mr. Dana T. Bartholomew have been elected to the board of Aluminium Limited and appointed Vice-Presidents of the company. Dr. Earl Blough and Mr. George O. Morgan are retiring from active association with the company after long service.

Mr. W. E. Hendricks, Assistant to the General Sales Manager, LeTourneau-Westinghouse Company, has been appointed Domestic Sales Manager, succeeding Mr. H. R. Powers, who has resigned. Mr. Lloyd Roger, Assistant Advertising Manager, has been appointed Sales Promotion Manager.

Mr. A. E. Underwood, a Director of the Plessey Co. Ltd., has been elected to the board of Plessey International Limited.

Mr. D. L. Lewis has been appointed Technical Representative in South Wales for Ferodo Limited.

We regret to record the death, at the age of 49, of Mr. G. B. Milburn, Tyre Sales Executive, Dunlop Rubber Co. Ltd.

Mr. Uno Magnusson has been elected a Director of the Skefko Ball Bearing Co. Ltd.

Mr. E. N. Robinson, Deputy Chairman of A. Reyrolle & Co. Ltd., has been elected a Director of C. A. Parsons & Co. Ltd.

The following appointments have been announced by Johnson & Phillips Limited:—Mr. B. E. Leeson, Senior Sales Engineer, has been appointed Home Sales Manager (Plant), with responsibility for switchgear, transformer and capacitor sales. Mr. C. W. Cawte becomes Home Sales Manager (Cables), and Mr. D. S. Barwell, Sales Promotion Manager (Export).

The following staff changes are announced by the Cape Asbestos Co. Ltd.:—

Mr. A. A. Cross has succeeded Mr. T. C. Hale as Plant Manager of the Harts Lane, Barking, factory. Mr. Cross's place at Acre Mill has been taken by Mr. A. E. Hepper, who has joined the company from Courtaulds Limited. Mr. L. H. Smart has been appointed Manager of the new plant opened at Stirling for the manufacture of "Rocksil." Mr. H. Elliott has taken Mr. Smart's place at Kentmere.

Mr. E. S. Waddington, F.S.E., A.M. (S.A.), I.Mech.E., M.Inst.W., Associate I.F.E.E., Associate (s.a.), I.E.E., of Industrial Products Department, Philips Electrical Limited, has been appointed a Trustee of the Society of Engineers, the third oldest professional engineering society in the United Kingdom, which celebrates its centenary during 1954.

Electrical Equipment for Railways

Manufacturers' output of rolling stock and fixed installations during 1953

The past year was important in the records of British railway electrification for the experiments begun with 50-cycle motor coach stock on the Lancaster-Morecambe-Heysham line of the L.M.R. Three 860-h.p. rectifier equipments (described in our October 9 issue) were supplied for these trials by the English Electric Co. Ltd.

The English Electric main-line diesel-electric units delivered were 1,500 h.p. locomotives for the Queensland Government Railways, and 1,000 h.p. locomotives for the Rede Ferroviaria do Nordeste (Brazil), both types having Vulcan Foundry mechanical parts. Complete 400 h.p. diesel-electric shunters went to the Netherlands Railways, and to Imperial Chemical Industries Limited; and three-coach trains of 400 h.p., with mechanical parts and coachwork by the Birmingham Railway Carriage & Wagon Co. Ltd., were sent to the Egyptian State Railways, in addition to more 800 h.p. five-coach sets for the same administration. Diesel-electric power equipments for a 2,000 h.p. main-line locomotive and for further 400 h.p. shunters were supplied to British Railways.

Deliveries of electric locomotives by English Electric during 1953 included 2,400 h.p. 1,500-V. d.c. locomotives for the Victorian Government Railways, and further 3,600 h.p. 3,000-V. d.c. locomotives for the Spanish National Railways (the mechanical parts for the last-mentioned being built by the Vulcan Foundry Limited). Further 980 h.p. 675-V. d.c. electrical equipments for coaches have been supplied to the Southern Region.

In connection with the Metropolitan-Vickers Electrical Co. Ltd., the English Electric Co. Ltd. has supplied 800 h.p. 3,000-V. d.c. motor coach equipments to the Polish State Railways. Orders received by English Electric during 1953 included 750 h.p. diesel-electric locomotives for the Nigerian Railway and the South Australian Government Railways, 400 h.p. shunter equipments for British Railways, and further 980 h.p. 675-V. d.c. electric motor coach equipments for the Southern Region.

Sealed, air-cooled, steel tank rectifiers ordered during the year from the English Electric Co. Ltd. include six 1,000 kW. sets for London Transport, 1,500 kW., 1,500-V. equipments for the Victorian Government Railways, and three further 1,224 kW., 1,530-V. sets for the Netherlands Railways.

Traction business with the British Thomson-Houston Co. Ltd. has shown increased activity in diesel-electric equipments. The series of ten 1,000 h.p. Bo-Bo locomotives for the New South Wales Government Railways, with mechanical parts by the Birmingham Railway Carriage & Wagon Co. Ltd., was completed by the end of the year. Four of the 18 400-h.p. diesel-electric shunters for the Western Australian Government Railways, with Paxman engines and mechanical parts by the Clayton Equipment Co. Ltd., were shipped in the period. Two diesel-electric railcars were despatched to the Bolivian State Railways in 1953 with B.T.H. electrical equipment and Paxman 230-h.p. engines and were built by D. Wickham & Co. Ltd.

Supplies of equipment have continued

for Ruston-B.T.H. 155 h.p. diesel-electric works shunters, and for the standard 275 h.p. steel works shunter of the Yorkshire Engine Co. Ltd. The first of two 400 h.p. locomotives, also with B.T.H. equipment, has been completed at the works of the last-named builder. Fifteen diesel-electric equipments for British Railways standard shunters were ordered during the year. They will incorporate Blackstone engines. A steady demand has continued for Type RP resistors, which are being supplied for locomotives in South Africa, Victoria, and Spain. The ZP resistor is being adopted in many parts of the world as a load resistance for testing diesel-electric power plant. All the PCM camshaft control gear for the Toronto Subway cars (described in our January 8 issue) was delivered to the coach builder (the Gloucester Railway Carriage & Wagon Co. Ltd.) during the year.

Switchgear Equipment

Switchgear work with B.T.H. has included 33 kV., 750 MVA. single-bus apparatus for the Southern Region, where equipment of this type has been delivered for four substations. A 1,200 kW., 630-V. rectifier of exceptionally compact design has been supplied for the London Transport Executive substation at Whitechapel, and similar units rated at 600 kW., 330 V. are also under construction for the Executive.

In January the first of 48 1,100-h.p. 2-Do-2 diesel-electric locomotives being built by Metropolitan-Vickers—Beyer, Peacock, Limited, was shipped for service on the Western Australian Government Railways. The locomotives are powered by Crossley diesel engines. Other electrical equipments on which the Metropolitan-Vickers Electrical Co. Ltd. was engaged last year included seven for 2,500 h.p. Co-Co locomotives for the Manchester-Sheffield electrification. Work is proceeding on 40 1,500-V. d.c. locomotives for the Sydney-Lithgow electrification of the New South Wales Government Railways. Eight electrical equipments have been completed for 2,200-h.p. locomotives of the Polish State Railways and nine more sets, together with substation equipment, are nearing completion for use by the Coal Mines Administration in Poland. Twelve electrical equipments are being supplied for Coras Iompair Eireann diesel-electric locomotives. Twenty Metrovick 3,000-V. motor coach equipments are in hand for the South African Railways.

Electric locomotives, substation equipment, switchgear, and signalling apparatus have been supplied by Metrovick to the National Coal Board for Sandhole Colliery, and ten battery mining locomotives are in service with the board. Other electrical equipments are in hand for industrial locomotives and steelworks cars. Carriage lighting fittings have been ordered by the Metropolitan-Cammell Carriage & Wagon Co. Ltd., and special fluorescent fittings displaying the station name have been designed for Twickenham Station, Southern Region.

A Metropolitan-Vickers-G.R.S. signalling installation has been brought into use at Bridgeton Cross, Southern Region; new pulsating type track circuits have been installed on the Western Region, and prototype wheel counter equipment on the Southern Region. Contracts have been re-

ceived for NX interlocking at Potters Bar, Eastern Region; and for colour-light signalling between Stockport and Levenshulme, L.M.R. A large order from South Africa includes 70 searchlight and 25 position light signals.

Manchester Suburban Rolling Stock

Complete electrical equipments have been supplied by the General Electric Co. Ltd. for eight three-car multiple-unit sets to be used on Manchester-Glossop services in the stage of the Manchester-Sheffield-Wath electrification due for completion this year (see our January 22 issue).

Work is proceeding on a contract placed with the G.E.C. in 1953 for 15 power equipments for British Railways standard 0-6-0 diesel-electric shunters. Each comprises a 350 h.p. Blackstone diesel engine direct-coupled to a main generator, with belt-driven auxiliary generator and blower for the two traction motors. Transmission is by double-reduction gearing. Off-load selective series-parallel control of the motors is provided so that a wide range of shunting duties can be undertaken with a main generator of moderate dimensions.

G.E.C. substation equipment for railways in hand during the year included a 1,500 kW. rectifier transformer for the Victorian Government Railways. Most of the 33 kV., 750 MVA. switchgear for the Southern Region frequency changeover scheme in the London area has been completed and is in course of erection. A further 2,500 kW., 750/660 V. rectifier has been ordered for the same project, bringing the number of these units being supplied by the G.E.C. up to 49. Five 1,500 kW., 630 V. rectifiers have been ordered for the Moorgate Substation of London Transport, and two more 1,224 kW., 1,530 V. rectifiers with electronic arc suppression are being supplied to the Netherlands Railways.

Signalling equipment manufactured for the Toronto subway by the Siemens and General Electric Railway Signal Co. Ltd. includes two relay interlocking panels incorporating improved methods of indication and operation. Light for the illuminated

diagram follows Perspex guides so that alternative colours can be displayed in the same indicator aperture.

A route set up shows as a steady white line of light, which changes to red when occupied by a train. Signals are repeated in their appropriate colours as red, yellow, or green. New S.G.E. equipment introduced during the year includes a plug-in point contactor unit with overload device, interlocking relays which latch up magnetically when operated, and a new earth leakage detector.

The Brush Electrical Engineering Co. Ltd. records in its review of 1953 the

doubling of the previous capacity of the switchgear department, where special control gear for traction services is included in a range of apparatus going up to 33 kV. outdoor circuit breakers of 1,000 MVA. rupturing capacity. The company's new research laboratories now have seven main divisions, all equipped with the latest facilities for systematic investigation. A new system known as the Amplidex has been developed for the close voltage regulation of alternators, which is maintained under varying ambient and loading conditions without complications of equipment or maintenance.

New Manchester-Sheffield Electric Locomotives

First of seven Co-Co on trials

The first of seven double-bogie, six-axle (Co-Co) electric locomotives for the Manchester-Sheffield electrification scheme is now undergoing trials. The mechanical parts have been built at Gorton Works and the electrical equipment has been supplied by the Metropolitan-Vickers Electrical Co. Ltd., of Trafford Park, Manchester.

While of the mixed-traffic type, these locomotives are primarily intended for passenger working, and are provided with an electric boiler for train heating. They are capable of a maximum speed of 90 m.p.h. Through electric working between Manchester and Penistone will be introduced as the next stage of the Manchester-Sheffield scheme, for completion of the work between Manchester London Road and Dunford Bridge, through the new Woodhead Tunnel, will link up with the existing Dunford Bridge-Penistone-Wath section. Goods working on the latter part of the scheme was described in our July 31 and August 7, 1953, issues.

Some passenger trains in the next stage will be worked by the present Bo + Bo locomotives, but not all of these are equipped with train-heating boilers so

that some would not be available for such work in winter. The electric motive power provided for the scheme comprises in all 58 Bo + Bo (described in our February 22 and February 29, 1952, issues), seven Co-Co, and eight three-car multiple-unit sets, to which reference was made in our January 22 issue.

INCREASE IN AIR PASSENGERS.—The Ministry of Transport & Civil Aviation states that last year British airports handled more than 3,500,000 passengers, of whom over half used London Airport and Northolt; this was an increase of 24 per cent compared with 1952. London Airport, with 1,205,000 passengers, showed an increase of 40 per cent on the previous year. Northolt handled 723,000 passengers, a decrease of 7 per cent. Other increases included: Jersey, 293,000 (16 per cent); Manchester Ringway, 209,000 (30 per cent); Belfast (Nutts Corner), 167,000 (13 per cent); Lympne, 84,700 (206 per cent); Southampton (Eastleigh), 78,300 (31 per cent); and Birmingham (Edmond), 66,000 (42 per cent).



Test train weighing 350 tons near Crowden, London Midland Region, hauled by new Co-Co locomotive

Training School at Marylebone for Refreshment Room Staff

The Training School at Marylebone Station for refreshment room staff which was initiated by the L.N.E.R. in 1946 has been extended and re-equipped by the Hotels & Catering Services, B.T.C., to adapt it to changed catering methods. It exists to give training to all refreshment room staff employed by British Transport Catering Services and covers the countrywide network of station refreshment rooms at some 333 stations. It operates continuously, except at holiday periods; most courses are for 14-16 persons and of a week's duration. There are courses for new entrants to the refreshment room service, refreshment room attendants, chargehands, managers, and also special courses of three months for trainee managers. Staff are accommodated in a staff house nearby, or if they work in London they may travel daily to the Training School. Trainees receive standard pay plus board and lodging.

The school is run by Miss C. Allan, the Principal, and an assistant. Additional talks and demonstrations are given by specialists. The school is equipped with most of the equipment found in refreshment rooms and emphasis is on practical demonstrations and work.

The syllabus includes such subjects as the preparation and service of hot beverages, soft drinks, and sandwiches, display of food, explanation of beers and spirits, and measures used and types of glasses, staff welfare and hygiene. There are visits to stations, a brewery and the Tea Bureau. Films are shown on all courses and particular attention is given to standards of hygiene, courtesy and conduct. Refresher courses are also given. During 1952, 404 members of the staff were given training; in 1953 the number was some 700, including those who took two-day courses. All staff are issued with a summary of the instruction given and short tests are carried out at the end of the courses. It is intended to open at Marylebone a training school for cafeteria car staff this Spring.

Extended Plans for Light Diesel Passenger Units

Further plans to extend the use of multiple-unit lightweight diesel trains on British Railways have been announced by the British Transport Commission.

Besides the West Riding of Yorkshire and West Cumberland schemes already announced, it has now been decided to provide similar services as soon as possible in Lincolnshire, in East Anglia, between Newcastle and Middlesbrough, and between Edinburgh and Glasgow.

All four new schemes will be partly in substitution of existing steam services, and partly in addition. The greater economy and flexibility of the diesel railcars on selected routes is expected not only to enable existing steam services to be worked at lower cost, but also to provide better facilities which will create fresh business.

£2,000,000 Plans for Dieselisation

The total expenditure which has been approved on this type of development on British Railways now amounts to over £2,000,000. Eight two-car units for the West Riding, 13 for West Cumberland, and 13 for Lincolnshire, are being built at Derby Works, London Midland Region,

with diesel engines supplied by contractors. The units for the West Riding are expected to be complete about the end of April, and those for West Cumberland in the autumn, to be followed by those for Lincolnshire. Production arrangements for the 13 two-car units for East Anglia, 10 motor vehicles and 10 trailers for the Newcastle-Middlesbrough services, and the six multiple-unit train sets and eight spare vehicles for the Edinburgh-Glasgow services are now being worked out.

Similar types of units will be used for all areas, except Edinburgh-Glasgow. They will consist of two coaches, one powered by two bus type engines of at least 125 h.p. each under the floor, the other being a trailer or another motor coach as required.

Each two-car unit can be driven from either end, and can be operated as a self-contained unit seating about 130 passengers, or alternatively can be formed into multiple unit trains of varying size according to traffic requirements.

The units for service between Edinburgh and Glasgow will be of different design, and will incorporate greater amenities including buffet cars; they will afford a prototype for the development of fast and relatively light interurban diesel services.

Details are not yet available of the services to be worked by light diesel units in the new areas. The B.T.C. states that these will be announced by the Chief Regional Managers concerned as soon as possible.

Staff & Labour Matters

Railway Efficiency

A meeting was held on February 9 at the headquarters of the B.T.C. between representatives of the Commission and of the three railway unions to give effect to that part of the agreement reached on December 16 between the Commission and the unions which provides that they shall confer in order to evolve ways of increasing the efficiency of the railway organisation. An exchange of views took place, and it was announced that further meetings would be held on the subject.

Busmen's Wages

The Minister of Labour has set up a court of inquiry into the dispute which has arisen over the wages of employees of private bus companies outside London. The court began its sittings last Monday.

The deadlock followed a meeting of the National Council for the Omnibus Industry on January 29. The unions are seeking an increase of 7s. a week which would be the same increase as that recently obtained by London busmen. At the meeting of the National Council on January 29 the employers' side repeated its offer to recommend companies to follow the award of the Industrial Court made in the case of the municipalities entirely without prejudice to any further claim.

The unions could not agree to accept this offer of the Employers' Side of the National Council, and in the light of the circumstances prevailing, the latter informed the unions of their intention forthwith to recommend companies to pay an increase of 4s. a week with effect from December 7, 1953.

Index of Retail Prices

On various occasions in connection with wage claims there has been criticism of the index of retail prices as a measure of the

price of goods and services bought by the average family. In a written Parliamentary answer the Minister of Labour, Sir Walter Monckton, on January 27, defended the index. He said that the Government was continuing to take measures to maintain the accuracy of the index, but as it stood today, it was without doubt up-to-date, reliable, and accurate for its purpose.

Parliamentary Notes

Automatic Train Control

When Mr. Geoffrey Wilson (Truro—C.) on February 3 asked what progress was being made with the experimental development of A.T.C., a demonstration of which was given to certain M.P.s. last year, Mr. Alan Lennox-Boyd (Minister of Transport & Civil Aviation) said progress was being made, but the B.T.C. naturally was very anxious to perfect it before making it universal.

Questions in Parliament

British Railways Pensions Scheme

Mr. Eric Johnson (Manchester Blackley—C.) on February 3 asked if the Minister of Transport & Civil Aviation was now in a position to make a statement about the new scheme for pensions for the wage grades working on British Railways.

Mr. Alan Lennox-Boyd: B.T.C. has reached agreement with the unions on the outline proposals for a pension scheme for male wages grades. The detailed drafting of the rules is now proceeding in consultation with the unions.

Mr. Johnson then asked when the Minister expected these consultations to be completed.

Mr. Lennox-Boyd said they were getting on with them fairly fast; the rules were rather complicated and he thought this matter was best left to the Commission and the unions concerned.

Roads over Railway Bridges

Mr. Hugh Molson (Parliamentary Secretary to the Ministry of Transport) in reply to a question on January 27 on the upkeep of roads on overline railway bridges, said it seemed desirable that the local highway authorities should take over on suitable terms responsibility for the upkeep of roads passing over railway bridges, other than trunk roads which are already vested in the Minister. His Department some time ago initiated discussions on these lines between the B.T.C. Commission and the local authority associations and he hoped they would be successful.

Accidents on British Railways

When Mr. R. J. Erroll (Altrincham & Sale—Con.) on January 27 asked what steps the Minister of Transport & Civil Aviation was taking to reduce accidents on British Railways, the Minister, Mr. Alan Lennox-Boyd, pointed out that responsibility for the safety of railway operation lay with the B.T.C. The Railway Inspecting Officers of his Ministry, who had certain statutory functions in connection with railway safety were in constant touch with the Commission on measures to maintain and improve the high standards which the railways set themselves in these matters.

Full information, he added, could be found in the annual reports of the Chief Inspecting Officer of Railway Accidents.

Contracts & Tenders

An order for 57 first-class all-steel coaches seating 80 passengers has been placed with the Canadian Car & Foundry Company, Montreal, by the Canadian National Railways. The cost is \$7,486,000. The firm is now building 161 coaches of the same type for the C.N.R. on orders placed late last year. All coaches have single vestibules, air conditioning, picture windows, roller bearings and coil-type springing.

British Railways, North Eastern Region, have placed the following contracts:—

Mitchell Engineering Limited, Peterborough: equipment for mechanical coaling plant at Leeds Neville Hill

Dorman, Long & Co. Ltd., Luton: demolition of main arched roof over tracks and south portico at Middlesbrough Station

The High Commissioner for India is inviting tenders for carriage and wagon axles. Full details appear under Official Notices on page 195.

Tenders are invited for the supply of rails and rail accessories for the North Western and Eastern Bengal Railways. Full details appear under Official Notices on page 195.

The closing date for the call for tenders issued by the State Railways of Thailand for diesel-hydraulic locomotives and railcars, details of which were given in our January 22 issue, has been postponed to March 3. The maximum axle-load has been raised to 10 tons.

The Special Register Information Service, Board of Trade, Export Services Branch, states that the British Embassy at Cairo has reported that a call for tenders has been published in the Egyptian State Railways *Weekly Bulletin* No. 3 of January 20, for sixteen 75-ton flat wagons.

The closing date for the receipt of tenders is February 18. Copies of the specifications may be obtained by suppliers, on the approved list No. 24 from the Chief Inspecting Engineer's Office in London, 41, Tothill Street, S.W.1.

The Special Register Information Service, Board of Trade, Export Services Branch, reports that the Director-General of Supplies & Disposals, Government of India, is calling for tenders for 1,308 air extractor ventilators for coaching stock. The closing date for receipt of tenders is 10 a.m. on February 16, and tenders should be submitted to the Director-General of Supplies & Disposals, Shahjahan Road, (Section SRI), New Delhi.

If there is insufficient time in which to obtain documents from India, tenderers are advised to submit quotations by letter and, at the same time, ask for a set of the tender documents to be sent to them, which documents they should undertake to complete and return as soon as possible on the basis of the quotations made by letter.

A copy of the tender form can be examined at the India Store Department, 32/44, Edgware Road, London, W.2, on application to the Railway Branch, and the drawings can be seen at the offices of Hodges, Bennett & Co. Ltd., 59/60, Petty France, London, S.W.1, from whom copies may be obtained at a fixed price per sheet.

The Special Register Information Service, Board of Trade, Export Services Branch,

reports a call for tenders by the Director-General of Supplies & Disposals, Railway Stores Directorate, New Delhi, for:—

372 guards, axle, modified, l.h.
372 guards, axle, modified, r.h.

The closing date for receipt of tenders is 10 a.m. on February 19. Tenders quoting reference SRI/17258-D/I, should be addressed to the Director-General of Supplies & Disposals, Shahjahan Road (Section SRI), New Delhi.

If there is insufficient time in which to obtain the documents from India, tenderers are advised to submit quotations by letter and, at the same time, ask for a set of the tender documents to be sent to them, which documents they should undertake to complete and return as soon as possible on the basis of the quotations made by letter.

A copy of the tender form may be examined at the India Store Department, 32/44, Edgware Road, London, W.2, on application to the Railway Branch, and the drawings can be seen at the offices of Hodges, Bennett & Co. Ltd., 59/60, Petty France, London, S.W.1, from whom copies may be obtained at a fixed price per sheet.

The Director-General of Supplies & Disposals, Railway Stores Directorate, New Delhi, is inviting tenders for 360 buffer plungers (round head), all classes.

Tenders are to be submitted to the Director-General of Supplies & Disposals, Shahjahan Road (Section SRI), New Delhi, quoting reference SRI/17289-D/III, and will be received up to 10 a.m. on February 24.

The Special Register Information Service, Board of Trade, Export Services Branch, reports that the Director-General of Supplies & Disposals, Railway Stores Directorate, New Delhi, is calling for tenders for:—

30,000 blades, metal louvre, upper, 9½ in. long.

25,000 blades, metal louvre, upper, 9½ in. long

The closing date for receipt of tenders is February 24. Tenders should be submitted to the Director-General of Supplies & Disposals, Shahjahan Road (Section SRI), New Delhi.

A copy of the tender form can be examined at the office of the High Commissioner of India in London, Director-General, India Store Department, 32/44, Edgware Road, London, W.2, and the drawings may be seen at the offices of Hodges, Bennett & Co. Ltd., 59/60, Petty France, London, S.W.1.

The Special Register Information Service, Board of Trade, Export Services Branch, states that the United Kingdom Trade Commissioner at New Delhi has reported that the Director-General of Supplies & Disposals, Government of India, is calling for tenders for 12 injectors, complete 8 mm. (Simplex reversible type minor assembly.)

The closing date for receipt of tenders is 10 a.m. on March 8, and tenders should be addressed to the Director-General of Supplies & Disposals, Shahjahan Road, New Delhi.

A set of the tender documents, including conditions of contract and drawings, may be had on loan from the Branch, Lacon House, Theobalds Road, W.C.1.

The Special Register Information Service, Board of Trade, Export Services Branch, states that the United Kingdom Trade Commissioner at Karachi has re-

ported that the Ministry of Communications (Railway Division), Government of Pakistan, published in *Dawn* of January 21 a call for tenders which reads as follows:—

"GOVERNMENT OF PAKISTAN, MINISTRY OF COMMUNICATIONS (Railway Division)

Tender Notice

Tenders are invited for the supply of 19 broad-gauge (5 ft. 6 in.) main line diesel-electric locomotives for the North Western Railway.

"Tender documents including instructions to tenderers, tender forms, schedule of requirements, specifications and conditions of contract can be obtained from the office of the Director General (Railways) Railway Division, Ministry of Communications, Room 342, 2nd Floor, Multi-storied Building, Adj. Assembly Building, Kings Way, Karachi, on payment of Rs.100 which amount will not be refunded under any circumstances.

"Tenders will only be considered from those diesel-electric locomotive manufacturers who have built diesel-electric locomotives of the power and size required and which have been in service on railways and proved successful. Tenders from firms who do not fulfil these conditions will not be considered.

"Tenders will be accepted only on the specified tender forms and schedule enclosed with the tender documents.

"Successful tenderer will be required to execute an agreement before the commencement of supplies, and will also be required to furnish a security deposit not exceeding 5 per cent of the value of the contract.

"Tenders in sealed cover superscribed 'TENDER FOR BROAD GAUGE (5 ft. 6 in.) MAIN LINE DIESEL-ELECTRIC LOCOMOTIVES' must reach the office of the Director General (Railways) Railway Division, Ministry of Communications, Room No. 302, 2nd Floor, Multi-Storied Building, Adj. Assembly Building, Kings Way, Karachi, by noon on March 22, 1954, and will be opened in the same place at 11.00 hours on March 23, 1954, in the presence of those tenderers who may desire to be present.

"The Government of Pakistan do not bind themselves to accept the lowest or any tender and reserve to themselves the right to reject any or all tenders without assigning reasons therefor.

S. M. AMIR,
For Director General Railways."

THOS. W. WARD LIMITED: INCREASE OF SHARE CAPITAL.—The board of Thos. W. Ward Limited proposes to increase the authorised share capital from £2,200,000 to £4,000,000 and to capitalise £1,100,000 of the company's reserves by applying such sum in paying up in full £1,100,000 £1 ordinary shares, these shares to be allotted as bonus amongst the ordinary shareholders on a one for one basis so that the ordinary share capital will then become £2,200,000. The intention is to bring the ordinary capital further into line with the actual capital it represents, and to allow for a margin of authorised capital. Provided the consent of the Capital Issues Committee is obtained, separate meetings of holders of ordinary and employees shares will be convened as soon as possible. The board does not necessarily intend to recommend an increase in total distributions for the current financial year. Dividend policy will be determined only after consideration of results for the year ending June 30 next.

Notes and News

Accident in South Korea.—Fifty-seven persons were killed and more than 100 injured when a passenger train collided at speed with an empty wagon 20 miles south of Seoul, South Korea.

Assistant Traffic Superintendents Required.—Applications are invited for the posts of assistant traffic superintendents required by the East African Railways & Harbours Administration, Commercial & Operating Department, for tour of 40 to 48 months in the first instance. See Official Notices on page 195.

L.M.R. Boxing Championship Entries.—Fifty-one entries have been received for the British Railways (London Midland Region) Boxing Championships to be held at Wolverhampton on Saturday, February 13. Winners in each of the 10 weights contests go forward to the inter-regional quarter finals, and if successful will box for the All-Railway Championships at the Albert Hall on Tuesday, May 4.

Navigational Aid for all British Railways Cross-Channel Vessels.—British Railways, which already have 27 vessels equipped with the Decca Navigator, are to equip similarly the remaining 40 cross-Channel ships of their fleet. It is an electronic device which gives a reliable method of fixing a ship's position under all conditions. The readings of meters which operate by signals transmitted from land station are plotted on a gridded Admiralty chart.

Beyer-Garratt Model Presented to Rhodesia Railways.—Beyer, Peacock & Co. Ltd. has presented to the Rhodesia Railways a model of a "20th" class Beyer-Garratt locomotive which formed part of the firm's exhibit at the Rhodes Centenary Exhibition at Bulawayo, shown in the accompanying illustration. It was made and sent to Rhodesia before the locomotives were built. The model case also contains a Perspex panel on which is engraved a cross-section of the locomotive. This class is under construction for delivery this year; the locomotives, of the 4-8-2 × 2-8-4 type, will have a tractive effort at 85 per cent boiler pressure of 70,000 lb. and weigh 255 tons in working order. The

centre-piece at the back of the stand is an oil painting of the Royal Train in Rhodesia hauled by "15th" class Beyer-Garratt locomotives. In front of it in the show-cases are models of the Hadfield Patent Precision reversing gear and the Beyer Peacock Patent Self-Adjusting Pivot. Other photographs depict manufacture in the Beyer, Peacock Works and other types of Beyer-Garratt locomotives built for Rhodesia.

British Railways Coal, Iron, and Steel Traffic.—Despite severe weather last week, British Railways carried 3,143,370 tons of deep-mine and opencast coal, including 401,950 tons at the weekend, an increase of 1,930 tons compared with the corresponding weekend last year. During the week ended January 30, 222,853 tons of iron and steel from the principal steel works and 307,500 tons of iron ore were conveyed.

Institute of Traffic Administration: Annual Dinner.—The annual dinner of the London Centre of the Institute of Traffic Administration will be held on Saturday, February 13, at 7 for 7.30 p.m. at the Charing Cross Hotel, Strand, London, W.C.2, and not at the Kingsley Hotel as previously announced. The principal guests will be Lord Merrivale of Walkhampton, Lord Douglas of Kirtleside, and Mr. Ernest Davies, M.P.

London Midland Region Stations Closed.—The following London Midland Region stations closed on February 1:—

- (a) Saughall (between Chester Northgate and Connahs Quay)
- (b) Grayrigg (between Lancaster and Penrith)
- (b) Caley
- (b) Thurstaston } between Hooton and West Kirby
- (c) Dicconson Lane & Aspull } between Hindley and Blackrod
- (b) Hilton House }
- (a) Closed for passengers, parcels, passenger train merchandise and freight traffic
- (b) Closed for passengers, parcels, and passenger train merchandise
- (c) Closed for passengers

Dundee and Fife Trades Holidays.—British Railways, Scottish Region, announced that on the occasion of the Dundee Trades Holiday through trains will be run from Dundee to London on the night of July 23 in conjunction with the "Starlight" services. The return trains to Dundee leave

London on the night of August 7. In connection with the Fife trades holiday commencing on July 16 through trains will run from stations in Fife leaving on the night of July 16 and returning from London on the night of July 31. This will obviate passengers travelling, as they did last year, via Edinburgh or Glasgow to join the "Starlight Specials" from those places.

Stewarts and Lloyds Data Card.—Stewarts and Lloyds Limited, Brook House, Upper Brook Street, London, W.1, has recently issued data in the form of an ivory card, on the inter-conversion of percentage elongations corresponding to different gauge lengths of steel. The data are in simple form and self-explanatory.

Withdrawal of Passenger Service from Dirlerton Station.—The Scottish Region announces that on and from February 1 the passenger service was withdrawn from Dirlerton Station on the North Berwick branch. Alternative rail facilities are available at North Berwick and the area is served by frequent bus services operating from North Berwick and Edinburgh. Traffic, including livestock, in full wagon loads continues to be dealt with at Dirlerton but parcels and other passenger train rated traffic and freight train traffic in less-than-wagon loads are now collected and delivered in the Dirlerton area by road from North Berwick.

Inexpensive "All-In" Tour of Scotland.—A week's tour of Scotland for as little as £15 7s. 6d. "all-in" is offered by British Railways in conjunction with the Creative Tourist Agents' Conference. The tour starts every Saturday from June 5 from Nottingham, Liverpool, Manchester, and other Lancashire towns, and the charge includes rail travel with meals by special train, accommodation in Scotland, and sightseeing trips by motor coach and steamers to beauty spots in Scotland. Every passenger is guaranteed a seat, but the number of seats in the trains are limited. These tours can be booked at railway stations and at travel agencies.

Two Passenger Classes on the Continent.—Because of the relatively small proportion of passengers expected to travel in the first, or upper of the two classes envisaged in the U.I.C. Board of Management decision discussed in the editorial article in our February 5 issue, it is reported that much of the present second class main-line stock will be available for passengers travelling in the new lower ("second") class, which in other respects will not be inferior to the present second class. Besides providing six first and eight second class seats per side corridor compartment, consideration is being given to the possibility of constructing second class carriages with 12 compartments, each fitted with six seats which could be converted into berths (*couchettes*) for night travel; this would give 72 berths by night, compared with 64-88 seats in existing third class corridor coaches.

Fruitful Christmas Trees.—At a ceremony in York on February 4, Mr. H. A. Short, Chief Regional Manager, North Eastern Region, presented a cheque for £362 to the York "A" & Tadcaster Hospital Amenities Fund; other local donations also were made from the proceeds of Christmas appeals in the Region. The York Station 1953 Christmas Tree appeal received £427 18s. 11d. from all sources, an increase over the previous year of £13 17s. 11d. At Newcastle the 1953 Station Christmas signals transmitted from land stations are



Model of Beyer-Garratt locomotive for the Rhodesia Railways presented by Beyer, Peacock & Co. Ltd. to the railway administration and exhibited at the Rhodes Centenary Exhibition at Bulawayo; also shown is a Perspex panel on which is a cross-section of the engine

OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

ASSISTANT TRAFFIC SUPERINTENDENTS required by EAST AFRICAN RAILWAYS AND HARBOURS ADMINISTRATION, Commercial and Operating Dept., for tour of 40/48 months either (a) with prospect of permanency at salary, etc., in scale £796 rising to £1,390 a year, or (b) on temporary terms at salary, etc., up to £1,530 a year with gratuity of 10 per cent of salary. Commencing salaries according to experience. Outfit allowance up to £30. Free housing or allowance in lieu. Free passages. Liberal leave on full salary. Candidates of good education must have had thorough theoretical and practical railway training in commercial and operating duties preferably as Traffic Apprentices. Candidates for term (b) above must have had sound practical administrative experience as Railway Traffic Officers. Applicants now serving with British Railways are eligible for secondment under terms (a) above and should apply through their local offices. Write to the CROWN AGENTS, 4, Millbank, S.W.1. State age, name in block letters, full qualifications and experience and quote M3B/34138/RA.

DUE to plant expansion important wagon builder desires Sales Engineer for Belgian Plant. Work to consist of estimating costs both material and labour, preparing detailed technical specifications, writing quotations, and general sales work both written and by personal contact. Spanish and French languages desirable. Technical training essential. Preference given to man willing to travel. Excellent future for man with right combinations of sales and technical abilities. Minimum age 25, maximum depending on experience but preferably not over 45. Excellent salary depending on qualifications. Reply Box 89, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

GUAQUI LA PAZ RAILWAY.—Assistant accountant. Qualifications: Man who has passed intermediate examination of recognised accountancy body preferred. Knowledge of railway accounts an advantage. Preferably single between 28/35 years of age. **CENTRAL RAILWAY.**—Traffic Learner for training as an official. Single. Between 21 and 25 years of age. Good general education with transportation experience either practical or theoretical. Knowledge of Spanish language preferable but not essential. Apply SECRETARY OF THE PERUVIAN CORPORATION, 144, Leadenhall Street, London, E.C.3.

RAILWAY Draughtsman-Surveyor required by large firm railway contractors, applicants must have ability to carry out site surveys, plot same in layout form to good working scale (detailing for manufacture of turnouts, etc., done by other draughtsmen); capable of full use of theodolite and level; duties to include site supervision of contract in progress; age 25-30 years; man with British Standard Specification experience preferred; conditions of employment to include provision of car, all travelling and general expenses; five-day week on rota system; comprehensive superannuation scheme, etc. Write in first instance, stating age, experience and salary required, to Box 93, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

SUPERVISOR for erection of telecommunication lines, block signalling overhead pole route urgently required for duty overseas. Write Box 91, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

of £67 13s. 2d. over last year. The station's prize of £4 for being a "Best Kept Station" was given to the fund. At Hull the tree run in conjunction with the Mother Humber Fund produced £882 13s. 3d.—an increase of £194 9s. 1d. over 1952, and the best total since 1947. Since the inauguration of the Christmas tree displays in 1935, a total of £36,310 9s. 6d. and 93,407 gift parcels of toys and books has been collected in the North Eastern Region for hospitals, institutions, and children's homes.

Associated Commercial Vehicles Limited.—Group surplus on trading of Associated Commercial Vehicles Limited for the year to September 30 last was £1,984,319 (£1,842,857); total profits were £2,004,420 (£1,870,922). After charging depreciation providing £935,817 (£846,773) for taxation, and £8,073 (£9,250) for minority interests, the net profit attributable to the group was £774,399 (£633,946), of which £70,810 (£23,389) is retained by subsidiaries, leaving a balance of £703,589 (£610,557) to be dealt with by the parent company. As already announced the ordinary distribution

GOVERNMENT OF PAKISTAN. Ministry of Communications (Railway Division). **TENDER NOTICE.** 54/1860/S. Tenders are invited for the supply of the following material to the North Western and Eastern Bengal Railways:—

- (a) Medium Manganese/Carbon Steel Flatfooted Rails:—
 - (i) 90 lbs. R—25,735 long tons.
 - (ii) 75 lbs. R—4,731 long tons.
 - (iii) 60 lbs. R—3,000 long tons.
- (b) Fish Plates:—
 - (i) for 90 lbs. R—71,640 numbers equivalent to 677 long tons.
 - (ii) for 60 lbs. R—22,400 numbers equivalent to 112 long tons.

Note: The requirements against items (a) (i) and (b) (i) above may be reduced at the time of the actual placing in the order by 11,456 long tons and 394 long tons respectively.

Tender documents including instructions to tenderers, tender form, schedules of requirements, specifications, drawings and standard conditions of contract can be obtained from the office of the Director-General Railways, Railway Division, Ministry of Communications, Karachi; General Manager, North Western Railway, Lahore; General Manager, Eastern Bengal Railway, Chittagong; High Commissioners for Pakistan in London, Ottawa, and New Delhi; Embassies of Pakistan in Washington, Paris, Tokyo, Brussels and Bad Godesberg on payment of Rs.100/- for each set which amount will not be refunded. Tenders in sealed covers superscribed "Tender for Rails and Fish Plates" should be submitted direct to the DIRECTOR-GENERAL RAILWAYS, Ministry of Communications, Railway Division, Government of Pakistan, Karachi, so as to reach him before 11 hours on March 29, 1954, at which time and date, tenders will be opened in the office of the Director Civil Engineering, Railway Division, in the presence of any tenderers who may care to be present. The Director-General Railways reserves to himself the right to reject the lowest or any tender without assigning any reason therefor and may accept any tender in part or in whole. This call is being made simultaneously in Pakistan, Belgium, Canada, France, West Germany, India, Japan, U.K. and U.S.A.

VACANCIES for ASSISTANT MECHANICAL OFFICERS, Rhodesia Railways. Applications are invited for Assistant Mechanical Officers for the Mechanical Department for duties in workshops or on the running side in charge of locomotive, carriage and wagon maintenance. Applicants must have served a recognised pupilage or apprenticeship on a railway and subsequently had drawing office, workshop, process planning or running maintenance experience in a supervisory capacity. The minimum qualification is the standard required for admission by examination as Associate Member of the Institute of Mechanical Engineers or accepted equivalent. Age about 28 to 35 years. Salary scale £900 basic rising by annual increments of £40 to £1,460 per annum, plus cost of living allowance now applicable at 20 per cent on basic salary. The commencing salary may be higher than the minimum, dependent on age, qualifications and experience. Avenue of promotion is to the District Grade on basic salary scale of £1,350—£50 annual—£1,750. There is a pension fund, and certain allowances are applicable. Applications, together with full particulars of training, subsequent experience, education and technical qualifications, etc., to be forwarded to the CHIEF MECHANICAL ENGINEER, Rhodesia Railways, P.O. Box 703, Bulawayo, Southern Rhodesia.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copy to the SUBSCRIPTION DEPARTMENT, Cloth Press Limited, 33, Tothill Street, London, S.W.1.

GOVERNMENT OF PAKISTAN. Ministry of Communications (Railway Division). **TENDER NOTICE.** 54/1860/S. Tenders are invited for the supply of the following material to the North Western and Eastern Bengal Railways:—

1. **FISH BOLTS AND NUTS:**
 - (a) 5 in. x 1 in., 124,680 Nos. (126 long tons).
 - (b) 4 in. x 1 in., 46,200 Nos. (31 long tons).
2. **DOG SPIKES:**
 - (a) 5½ in. x ½ in. x ½ in., 1,230,300 Nos. (429 long tons).
 - (b) 4½ in. x ½ in. x ½ in., 800,000 Nos. (246 long tons).
 - (c) 4 in. x ½ in. x ½ in., 500,000 Nos. (141 long tons).
3. **ROUND SPIKES:**
 - 5½ in. x 3 in. dia., 980,300 Nos. (441 long tons).
4. **BEARING PLATES:**
 - For 90 "R" F.F. Single Rail canted, 178,200 Nos. (1,096 long tons).

N.B. At the time of the actual placing of the order, item 4 may be cancelled while the quantities against items 1 (a), 2 (a) and 3 may be reduced by 84,184 and 260 long tons respectively.

Tender documents including instructions to tenderers, tender form, schedules of requirements, specifications, drawings and standard conditions of contract can be obtained from the office of the Director-General Railways, Railway Division, Ministry of Communications, Karachi; General Manager, North Western Railway, Lahore; General Manager, Eastern Bengal Railway, Chittagong; High Commissioners for Pakistan in London, Ottawa, and New Delhi; Embassies of Pakistan in Washington, Paris, Tokyo, Brussels and Bad Godesberg on payment of Rs.100/- for each set which amount will not be refunded. Tenders in sealed covers superscribed "Tender for Rail Fittings" should be submitted direct to the DIRECTOR-GENERAL RAILWAYS, Ministry of Communications, Railway Division, Government of Pakistan, Karachi, so as to reach him before 11 hours on April 3, 1954, at which time and date, tenders will be opened in the office of the Director Civil Engineering, Railway Division, in the presence of any tenderers who may care to be present. The Director-General Railways reserves to himself the right to reject the lowest or any tender without assigning any reason therefor and may accept any tender in part or in whole. This call is being made simultaneously in Pakistan, Belgium, Canada, France, West Germany, India, Japan, U.K. and U.S.A.

THE HIGH COMMISSIONER FOR INDIA invites tenders for the supply of: **AXLES FOR CARRIAGES AND WAGONS:**—

- 1,680 Axles, Steel, Broad Gauge, for 16-ton load, 10-in. x 5-in. journals.
- 840 Axles, Steel, Metre Gauge, for 10-ton load, 8-in. x 4-in. journals.
- 6 Axles, Steel, Over Size, Broad Gauge, 9½-in. x 5-in. journals.
- 480 Axles, Steel, Metre Gauge, 1-in. x 3½-in. journals.

Forms of tender may be obtained from the DIRECTOR-GENERAL, India, Store Department, 32/44, Edgware Road, London, W.2, on or after February 12, 1954, at a fee of 10s. which is not returnable. Cheques to be made payable to "High Commissioner for India." Tenders are to be delivered by 2 p.m. on Friday, March 12, 1954. Please quote reference No. 354/53.

WORKS MANAGER required for old established Rolling Stock Works in East, specialising in production of all steel railway vehicles. Commencing salary equivalent to £173 monthly. Provident fund, free house, car, medical attention and passages for family. Applicants, who should have had experience of similar capacity, should apply, in writing, to Box 96, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

for the year is maintained at 12½ per cent, absorbing £258,328 (£246,586). The directors place £350,000 (£300,000) to general reserve and carry forward by £50,917 to £699,891. Net current assets are £11,393,000 (£10,797,000).

Services Withdrawn from Ingleton Branch, London Midland Region.—On February 1 services were withdrawn from the 23-mile Clapham-Low Gill (Ingleton branch) line of the London Midland Region. The stations affected are Ingleton, Kirkby Lonsdale, Barbon, and Sedburgh. The line was built in two sections, that from Clapham to Ingleton by the "little" North Western in 1850. The Ingleton-Low Gill section was promoted in 1857 by the Lancaster & Carlisle Railway to give the Midland, which leased the "little" North Western in that year, a direct route to Carlisle. During construction of the branch the Lancaster & Carlisle was acquired by the L.N.W.R., thus beginning a struggle between the Midland and the L.N.W.R. which destroyed the value of the branch as a through route and led at last to the decision of the

Midland to build the Settle-Carlisle line. The Midland-L.N.W.R. agreement of 1908 caused one or two through Midland trains to be routed over the branch before the 1914 war, and it has been used in emergency as an alternative through route when the Settle-Carlisle route has been blocked.

Butler Machine Tool Co. Ltd.—The annual general meeting of the Butler Machine Tool Co. Ltd. was held on January 22, Mr. James W. Butler, Chairman, presiding. The Chairman said in his circulated statement that the results of the year's trading were better than in previous years, as a result of their increased production. It was disheartening that of the trading profit of £115,510, £76,348 went in taxation. Although orders on the books had declined, because of changed requirements at home and restrictions on imports to overseas markets, the total remained high. Obtaining new business would become increasingly difficult, however, and the price question would have to be watched. Fortunately reorganisation of

the works and redesigning of major products put them in a better position than ever to face competition.

Proposed Yangtze Bridge near Hankow.—According to the Peking *People's Daily*, plans have been approved to build a 3,300-ft. double-deck steel bridge across the Yangtze in the Hankow area. Construction is not to begin until the autumn of 1955. The bridge, it is stated, will be high enough to allow large vessels to pass beneath. A railway will be carried on one deck, which will give through running between Peking and Canton.

R.E., A.E.R. Dinner.—With reference to the comment in the editorial note on page 142 of our issue of February 5, referring to the absence of senior railway officers at the R.E., A.E.R. Officers' dinner, we are informed that Sir Brian Robertson had accepted an invitation to attend but was unable to be present due to pressure of business, and that two Chief Regional Managers who were also invited, had to decline for various reasons.

Forthcoming Meetings

February 15 (Mon.).—Institute of Transport, Metropolitan Section, at 80, Portland Place, London, W.1, at 5.30 for 6 p.m. Symposium—London Transport: Railways—Mr. F. G. Maxwell: Roads—Mr. J. B. Burnell.

February 15 (Mon.).—Institute of Transport, Sheffield Graduate & Student Society, at the Road Haulage Association Offices, Sheffield, at 7.30 p.m. Paper on "Railway operation," by Mr. G. J. Aston.

February 16 (Tue.).—British Railways, Southern Region, Lecture & Debating Society, at the Chapter House, St. Thomas' Street, London, S.E.1, at 5.45 for 6 p.m. A display of films.

February 16 (Tue.).—Institute of Transport, Humberside Section, at the Chamber of Commerce & Shipping, Hull, at 7.30 p.m. Paper on "Modern railway signalling equipment," by Mr. O. S. Nock.

February 17 (Wed.).—Railway Students' Association, at the London School of Economics & Political Science, Houghton Street, London W.C.1, at 6.15 p.m. Paper on "The rail-sea-air problems of Continental traffic," by Mr. R. E. Sinfield, Continental Superintendent, British Railways, Southern Region.

February 17 (Wed.).—Institute of Transport, Beds., Cambs. & Hunts. Section, at the Town Hall, Luton, at 6.45 p.m. Paper on "Some legal aspects of passenger transport," by Mr. G. S. M. Birch, Senior Solicitor Assistant, British Transport Commission.

February 18 (Thu.).—Stephenson Locomotive Society, at 32, Russell Road, Kensington, W.14, at 6.45 p.m. Paper on "Massey Bromley and his locomotives," illustrated by lantern slides.

February 18 (Thu.).—Institute of Transport, Northern Ireland Section, at 21, Linenhall Street, Belfast, at 6 p.m. Paper on "Belfast Harbour in relation to transport," by Mr. F. W. P. Hampton.

February 18 (Thu.).—Institute of Transport, South Wales & Monmouthshire Section, at the Dock Manager's Office, Swansea, at 7.15 p.m. Paper on "The co-ordination of road-rail passenger services in South Wales," by Mr. W. M. Dravers.

February 19 (Fri.).—Institute of Transport, East Midlands Section, at the British

Railways Staff Training College, Derby, at 6.30 p.m. Paper on "The British Army transportation service," by Lt.-Col. A. Forster Fielding.

February 20 (Sat.).—Stephenson Locomotive Society, Leeds Section, at the Y.M.C.A., Albion Place, Leeds, at 2.30 p.m. Ten-minute papers by members and discussion.

February 20 (Sat.).—Institute of Transport, Southern Section, at the Royal Pier Pavilion, Southampton, at 12.30 for 1 p.m. Annual luncheon and visit of President.

February 23 (Tue.).—Institution of Civil Engineers, at Great George Street, Westminster, London, S.W.1, at 5.30 p.m. Paper on "Railway Civil Engineering Practice in the United States," by Mr. N. J. Nicholls and Mr. I. M. Campbell.

February 24 (Wed.).—Institution of Mechanical Engineers, at Storey's Gate, St. James's Park, London, S.W.1, at 6.45 p.m. Group discussion: "Are machine tools being over-elaborated?"

February 25 (Thu.).—British Railways,

Western Region, London Lecture & Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Paper on "Control of expenditure on the British Railways," by Mr. F. A. Dudge, Assistant Accountant, British Railways, Western Region.

February 26 (Fri.).—Institute of Transport. Annual dinner at Grosvenor House, Park Lane, London, W.1, at 6.45 for 7.30 p.m.

March 1 (Mon.).—Stephenson Locomotive Society, Midland Area, at 71, Edmund Street, Birmingham, at 7.15 p.m. Illustrated lecture: "Irish Mail—the story of a famous train," by Mr. G. Harrop.

March 2 (Tue.).—Permanent Way Institution, Leeds & Bradford Section, at British Railways Social & Recreational Club, Ellis Court, Leeds City North Station, at 7 p.m. Paper on "The working of a mechanised marshalling yard," by Mr. G. C. Clark, Assistant District Operating Superintendent, Hull, British Railways, North Eastern Region.

Railway Stock Market

The upward trend in stock markets developed boom proportions this week as the volume of business rose to its highest level since 1947. Industrial shares in a further advance reached their peak prices for seven years, though the biggest feature was a strong rise in British Funds. The latter, and also the impetus given to the industrial share rise, were caused by talk of a possible cut in the bank rate from 3½ per cent to 3 per cent. This followed the reduction from 2 per cent to 1½ per cent in the bank rate in the U.S.A. Optimism has also continued to reflect the belief that income and other tax reductions are likely to be made by the Budget. It is not surprising, therefore, that markets are strong. The combination of reduced taxation and a lower bank rate, could give a big stimulus to industry by reducing financing costs.

There have been many further dividend increases announced this week and widespread expectations of many more to come. If income tax were reduced and profits tax cut, companies would have a larger part of their profits available for reserves and dividend payments. The rise in prices may already have discounted the scope for higher dividends in many cases, but markets are in a buoyant mood, though recently when dividend hopes have not been fulfilled, shares of some companies have reacted sharply. Another factor causing optimism is the view now gaining ground that an industrial slump in the U.S.A. is unlikely and that the present minor recession may be followed by a further extensive advance in production by the end of the year.

There was again better demand for Manila Railway stocks on recognition of the scope for eventual big appreciation in price. The "A" debentures strengthened further to 77, the "B" debentures held last week's improvement to 66, while the preference shares firmed up to 8s. 4½d. and the 1s. ordinary shares remained at 4s. 1½d. There was little demand for United of Havana stocks, though break-up estimates suggest that both the second income stock at its current price of 42½ and the consolidated stock at 6½ are undervalued.

Antofagasta ordinary stock improved from 8½ to 9, while the preference stock kept at 41½ and business at 72 was re-

corded in the 5 per cent (Bolivia) debentures. In view of the arrears of dividend, all of which will be cleared off one day, the preference stock is very moderately priced if an investor is prepared to take a long term view.

Buyers were about for Chilean Northern 5 per cent debentures, which again changed hands around 28, and also for Guayaquil & Quito 5 per cent bonds which were dealt-in at the slightly higher level of 45½. Nitrate Rails shares were 19s. 9d. and Taltal shares marked 14s. 3d.

Midland of Western Australia again changed hands around 25½, while Emu Bay irredeemable debentures have transferred at 11 and the 4½ per cent debentures at 62. Nyasaland Railways 3½ per cent debentures marked 79½ and the shares 4s. 1½d.

White Pass remained active, but moved lower, the no par value shares from \$28½ to \$27½, and the convertible debentures from \$101 to \$98. Canadian Pacifics were fractionally better at \$46½, but the 4 per cent preference stock eased to \$67½, though the 4 per cent debentures remained firm at £88½.

British Electric Traction continued to feature road transport and kindred securities; the 5s. "A" deferred units after advancing to 44s. 9d. on higher dividend expectations, came back to 44s. 3d., which, however, compares with 42s. 1½d. a week ago.

Engineering and kindred shares participated in the renewed rise in markets. T. W. Ward showed a big advance of 8s. 9d. to £5 on the 100 per cent share bonus news and market hopes of a bigger relative dividend on the larger capital. Vickers have risen further from 50s. to 51s. 6d. at the time of writing, Ruston & Hornsby were good with a further advance to 47s. 9d.

Shares of locomotive builders and engineers were also higher, with G. D. Peters 4s. shares changing hands up to 24s. 3d. on hopes of a bigger dividend. Beyer Peacock have risen from 30s. to 33s. 6d., and Vulcan Foundry from 22s. to 22s. 9d. Gloucester Wagon 10s. shares strengthened further to 17s. 3d. North British Locomotive were 14s. 7½d. and Hurst Nelson kept at 42s. at Glasgow. Charles Roberts 5s. shares were little changed at 18s. 6d. and Wagon Repairs 5s. shares kept at 15s. 9d.